

FEBRUARY, 1943

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

B & W PULVERIZERS

*... aid in getting cement to
the front line of Industry*

High availability is now one of the most important factors in the war effort — whether in man power, machine tools, ships, or pulverizers.

B&W Pulverizers, with a high availability record, are now definitely helping cement men to attain maximum output.

C-49.

**BABCOCK
& WILCOX**

THE BABCOCK & WILCOX COMPANY
85 LIBERTY STREET, NEW YORK, N.Y.

FEB 22 1943

WILLIAMS

ROLLER MILL WITH AIR SEPARATION

Means real economy for you on all types of medium to extremely fine grinding. Efficient grinding of Williams Roller Mill plus unusually accurate check on the size of the finished product. Any oversize particles are returned for regrinding and you are assured of a uniform fineness. The superior performance of the Williams Roller Mill can best be told by its outstanding features.

EIGHT DISTINCTIVE FEATURES

AUTOMATIC ELECTRIC FEED CONTROL automatically adjusts the feed to match the capacity of the mill.

LONGER LIFE OF GRINDING PARTS assured by abrasive resistant materials.

ELECTRIC STEEL AND ALLOY CASTINGS at important points.

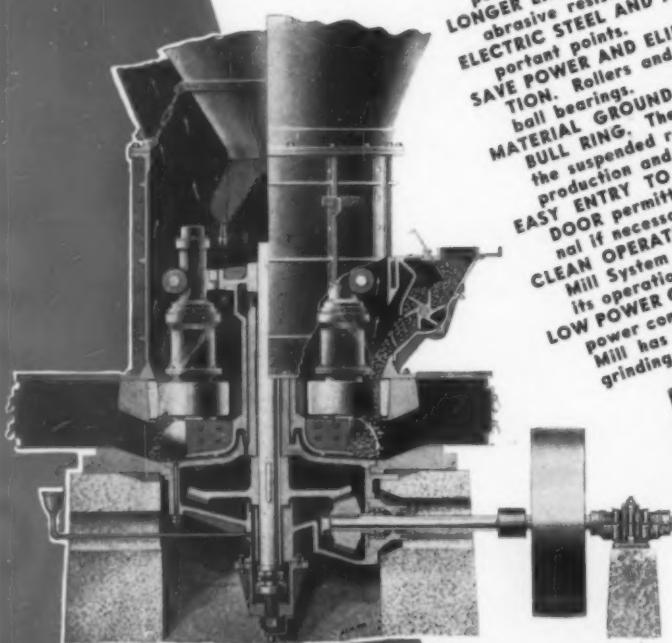
SAVE POWER AND ELIMINATE DAILY LUBRICATION. Rollers and main spindle operate on ball bearings.

MATERIAL GROUND BETWEEN ROLLERS AND BULL RING. The Williams Roller Mill is of the suspended roller type assuring maximum production and grinding efficiency.

EASY ENTRY TO MILL PROVIDED BY LARGE DOOR permitting removal of an entire journal if necessary.

CLEAN OPERATION. Since the Williams Roller Mill System operates under a slight vacuum its operation is extremely clean and dustless.

LOW POWER CONSUMPTION. In terms of horsepower consumed per ton ground the Williams Mill has been proven the most economical grinding machine known.



Section view of Williams Roller Mill

THE WILLIAMS PATENT
CRUSHER & PULVERIZER CO.
600 St. Louis Avenue St. Louis, Mo.

POSITIVE CONTROL OF FINENESS

Any fineness, from 20 mesh to 400 mesh can be obtained with Williams Roller Mills and Air Separation Equipment. Instant changeability from 70% through 100 mesh to 99.9% through 325 mesh.

Bulletin No. 300 describes the Williams line of fine grinding and air separation equipment. Write today for a copy.

OTHER WILLIAMS FINE GRINDING AND AIR SEPARATING EQUIPMENT

Williams Impact Mill with Air Separation

Used for grinding hydrated lime to 99.9%—325 mesh, clays, filter press cake—dries and grinds simultaneously.

Williams Super-Separator

when operating on ordinary non-sticky materials. Fineness regulated known from 70%—200 mesh to 99.97%—325 mesh.

Williams "Spinner" Air Separator

Is especially well suited to handling of sticky materials. Fineness of product is controlled by increasing speed of "Spinner" blades.



WILLIAMS
OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD
PATENT CRUSHERS GRINDERS SHREDDERS



EASTON TLC-6 — TIER-LIFT ELECTRIC TRUCK
CAPACITY — 6,000 LBS. SERVING THE NAVY
AND OTHER ARMED FORCES, ALSO WAR
INDUSTRIES. BULLETIN 162.



EASTON MODEL 1614 — INDUSTRIAL
TRAILER. CAPACITY — 30,000 LBS.
EASTON TRAILERS ARE HANDLING
GUNS AND SHELLS IN MUNITIONS
PLANTS. BULLETINS 191 AND 192.



EASTON ROCKER DUMP TRAILER
SIMILAR UNITS ARE SERVING AIRCRAFT
AND OTHER WAR INDUSTRIES
ALSO ROCKER DUMP CARS

BELLOW: EASTON DOUBLE-BODIED TANDEM SEMI-TRAILER.
ON SEMI-TRAILERS SEE BULLETINS Nos. 173 AND 175.

*Keep moving
WITH
EASTON*

VICTORY MODEL ELECTRIC TRUCKS

★ To help conserve critical materials EASTON has limited production of electric trucks to six standard government-approved models: the low-lift, the tier-lift, the low-platform and the high-platform trucks of 4,000 pounds capacity; and the 6,000 pound low-lifts and tier-lifts. Let EASTON engineers demonstrate how one of these six basic models can be adapted to your requirements.

INDUSTRIAL CARS AND TRAILERS

★ EASTON cars and trailers are used in almost every industrial haulage operation — handling raw materials at their source, moving parts and finished products through production processes, speeding up work at distribution centers. Capacities range from 4,000 pounds to 250 tons. Every EASTON car and trailer is a Victory Model, using fewer critical materials wherever possible and built from the ground up for "E-Plant" efficiency.

ENGINEERING COUNSEL

★ EASTON specializes in engineered material handling equipment designed to meet specific operating conditions. For new ideas in material handling, for repairs, or for replacements write to: Engineering Counsel, Easton Car & Construction Company, Easton, Pennsylvania.

B-1003



Rock Products

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Leading Articles

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Rock Plants

AS YOU LIKE THEM •

No two rock jobs are alike. They vary in material—in the size of the feed—and the size and number of sizes in the product. Some rock must be washed—some rock is hard and brittle—others are tough—and some is soft.

In one case, screening is the big problem—and in others it is crushing.

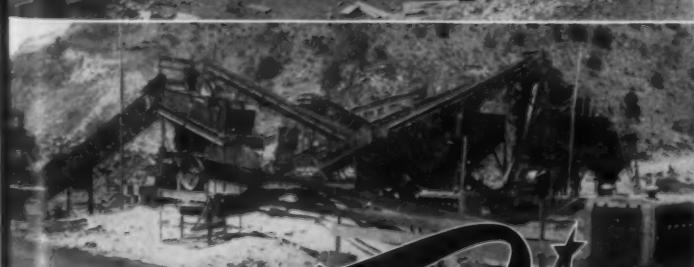
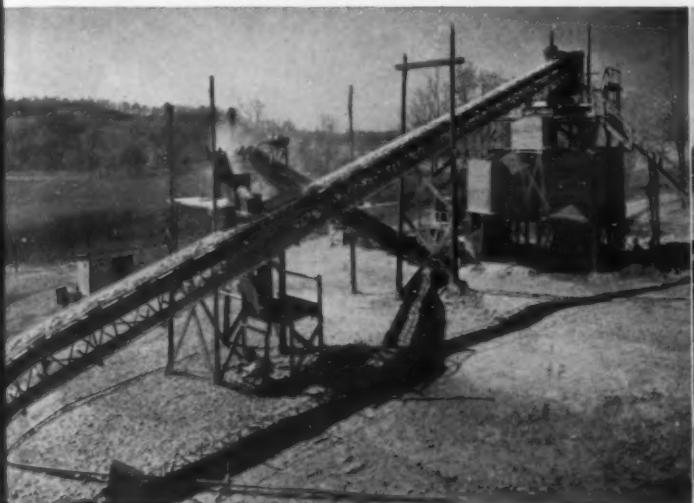
For your rock job, you want a plant that is tailored to your problem.

That is where Pioneer can help you. Pioneer Rock Plants are tailor made to suit the particular requirements of the job. Stand-

ard Pioneer Units are used—jaw crushers—roll crushers—screens—conveyors—elevators—and bins.

Tell us your rock problem. We will make a preliminary layout of a plant to suit your conditions. It will be submitted to you for revision and consideration. After approval, we will make finished installation and foundation drawings.

Furthermore, a Pioneer Rock Plant is complete with power, drives, and all accessories. It is fully engineered and factory built—yet tailored to your job—and there is no cost for this Pioneer Engineering Service.



Pioneer
ENGINEERING WORKS
Minneapolis, Minnesota, U.S.A.

TO SPEED UP YOUR CONVEYING



If you're building a new plant or modernizing an old one, and want to speed up production, may we recommend that you get in touch with us. We'll be glad to have one of our sales engineers call to see you. With his ability to make a survey of your requirements, plus the many years of research and engineering by the company, we feel quite certain we can solve your problems and, to your advantage.

Fuller experience covers many years and phases of conveying dry pulverized, fine, crushed and granular materials, pneumatically through pipe lines. May we hear from you . . . we're here to help.

FULLER COMPANY
CATASAUQUA—PENNSYLVANIA
CHICAGO—Marquette Bldg.
SAN FRANCISCO—Chancery Bldg.

G-24

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS . . . ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS . . . AIR-QUENCHING COOLERS . . . BIN SIGNALS

Buda Diesel Powers this Sand Pipeline



for less than
1¢ per ton

SINCE March 1942 this rugged BUDA 125 H.P. Diesel has moved 150,000 tons of sand out of this pit at Anniston, Alabama. Owner John B. Lagarde reports that costs are less than 1¢ per ton and performance has been highly pleasing on this tough, punishing job.

The outstanding fact about BUDA performance is that you get the same highly efficient, completely reliable operation even after thousands of hours of toughest service. For every power requirement—crushers, draglines, wash-



ers, hoists, conveyors, shovels, trucks, compressors, generator sets or pumps—you'll find BUDA the power that truly cuts costs.

BUDA builds Diesel, gasoline, butane and natural gas engines from 20 to 340 h.p. You'll be dollars ahead to write or wire now for complete information!



THE BUDA COMPANY
HARVEY (Chicago Suburb) ILLINOIS
GASOLINE and DIESEL ENGINES—20 to 340 H. P.

A KENTUCKY LIMESTONE PRODUCER TESTED TIMKEN BITS AND . . .

Here's The Story:

The Central Rock Company of Lexington, Kentucky decided in the spring 1940 to develop a shaft mine and to abandon their open face limestone quarry which had been operated for years. The changeover called for a 7 x 22 x 265 foot shaft and this company was naturally interested in equipment that would enable them to sink the shaft at the lowest possible cost. Timken Bits were one of the items tested and in the words of Superintendent W. J. Sparks "due to their outstanding performance we finished the shaft with Timken Bits."

Their eyes opened to the advantages of Timken Bits the operators decided to test Timken Bits in driving entries and rooms off the shaft bottom. Again, their performance was gratifying.

As a result of the Timken Bit's performance in these two tests this mine, producing 80 tons of rock per hour, is today using Timken Bits on wagon drills, hand-held hammers and stoppers.

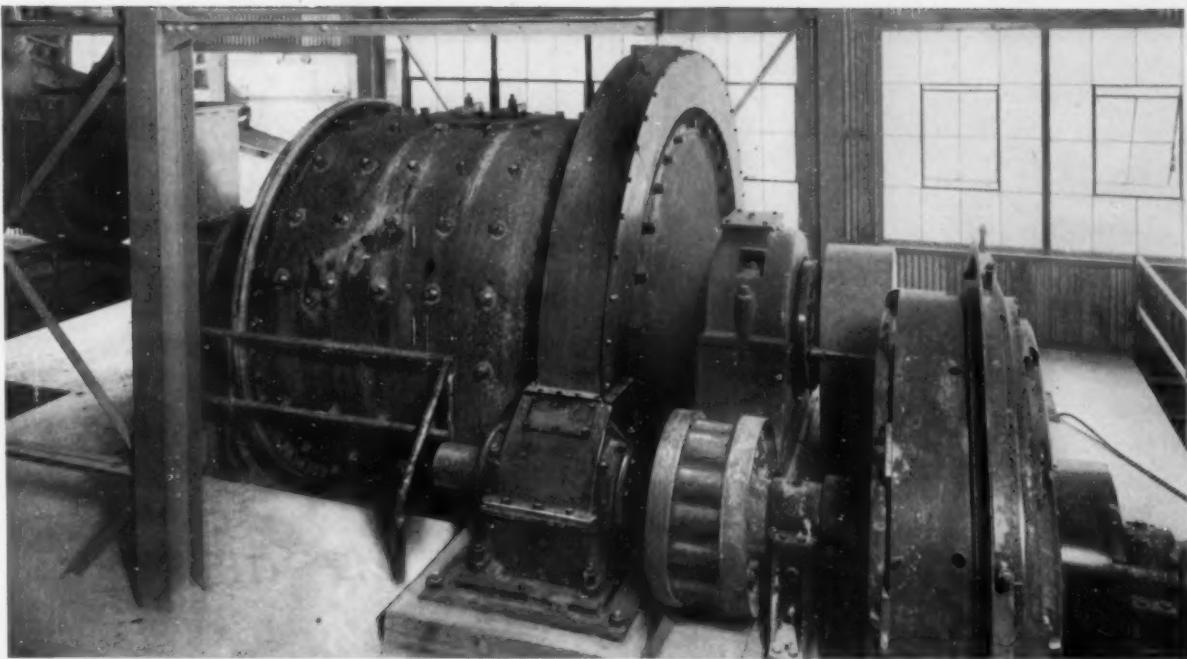
A drilling test is far more effective than anything we can say for Timken Bits. Don't test them "sometime"—but arrange to test them immediately. The Timken Roller Bearing Company, Canton, Ohio.



The One
Test For Every
Decision—Will It
Help To Win The
War?

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
ROCK BITS

TRAYLOR GRINDING MILLS



WE BUILD

Rotary Kilns
Rotary Coolers
Rotary Dryers
Rotary Slakers
Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

Within the past two decades, and more, and especially so during recent years, grinding equipment manufactured by Traylor has been specified for new cement, lime and process plants, as well as for old ones undergoing expansion and modernization. So frequently, indeed, has this been the case that it seems almost as though the engineers in these industries have felt perfectly safe in dismissing their grinding problems with "grinding mills by Traylor," thus making available more time to be devoted to the study of other details.

Considering the weight of responsibility resting upon the shoulders of these engineers, which compels them to be

most careful about equipment they specify, we are highly appreciative of the confidence they repose in Traylor. More than that, we recognize our own responsibility, to be, in turn, sure about our recommendations.

As a result, our engineers are always studying, in office and field, to keep "up on," and even a step ahead of, developments in the cement, lime and process industries. They've got to be, you see, so as to be ready to meet, even anticipate, the needs of the friends who trust them. These engineers are also at the service of operators who do not know Traylor equipment. Use them! Write us!

Write for Bulletin 2103

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551 Howe St., Vancouver, B. C.

Export Department—104 Pearl St., New York City. Foreign Sales Agencies: London, Lima, São Paulo, Rio de Janeiro, Buenos Aires, Santiago, Valparaíso, Antofagasta, Oruro, San Juan, P. R.

3,140,000

The equal of a 20 ft. highway from



San Francisco

HERE is a record to shoot at
—3,140,000 tons for the year 1942!

This is the production of six Cedarapids
Crushing plants operated by the Concrete
Materials and Construction Co. of Cedar Rapids, Iowa.
Here's the equivalent of 3055 miles of 20 ft. highway
from San Francisco to New York, 2½ in. thick —
enough stone to pave four Alcan Highways!

Getting things done is what counts today, and out
of today's performance comes the guidance to the selec-
tion of machinery that is going to assure a successful
business tomorrow. Cedarapids Equipment brings you
the advantages that will help you meet competition
after the "Duration."

Cedarapids plants can be engineered for your aggre-
gate producing needs. From the great Morok Plant (the
only plant giving Big Production at low cost that is
completely portable) to the smallest screen or crusher,
there is Cedarapids equipment that will fit your future
plans. Learn about Cedarapids equipment now. Come
to Headquarters for aggregate producing equipment.

IOWA MANUFACTURING COMPANY
Cedar Rapids • Iowa



TONS OF ROCK

Coast to coast $2\frac{1}{2}$ in. thick



Cedar
Rapids

for
**VITAL DEFENSE
PROJECTS**

all produced by one contractor

with
Cedarapids MOROK
and PORTABLE PLANTS

New York



WAR WORK . . . *Nazi Style*



OFF to Nazi-land, forced to labor in a mine under the cold eyes of a brutal guard! Perhaps an ill-timed blast will end your misery . . . for life is cheap in *War Work, Nazi Style*.

Not so—over here. A vast army of men are devoting themselves *by choice* to the task of supplying wartime's tremendous demand for coal, iron, copper, stone. . . . This is *War Work, American Style*—and every life is valuable. For the man who can safely blast down tons of ore and rock is an essential worker in *your* fight for freedom.

We are making Primacord-Bickford Detonating Fuse for use in quarries and open pit mines, where it speeds production for war, as it has for peace; produces more power from explosives and reduces the hazards of blasting.

Victory begins underground!

THE ENSIGN-BICKFORD CO.
SIMSBURY, CONNECTICUT



Primacord-Bickford
Detonating Fuse



TELSMITH PLANT

turning out 1,500,000 yds. of aggregate for NORFORK DAM

Quarry Plant Equipment by TELSMITH

- One 48" x 12' Telsmith Heavy-Duty Apron Feeder
- One 72" x 25' Telsmith Hercules Scalping Screen
- One 16-B Telsmith Primary Breaker
- One 5' x 12' Telsmith Double Deck Pulsator Screen
- Two 30" x 18" Telsmith Double Roll Crushers

Sand and Gravel Plant Equipment by TELSMITH

- Two 60" x 22' Telsmith Hercules Washing Screens
- Two 5' x 12' Telsmith Double Deck Pulsator Screens
- Two 3' x 8' Telsmith Single Deck Pulsator Screens
- One 57" x 12' Telsmith Screw Re-washer
- Four No. 10 Telsmith Sand Tanks
- Four 66" x 16' Telsmith Twin Screw Sand Classifiers
- Five 30" x 5'6" Telsmith Plate Feeders
- Three 24" x 5' Telsmith Plate Feeders

Total power requirements for both quarry, and sand and gravel plants 1250 hp.

● Down in Arkansas, near Mountain Home, the Utah Construction Co. and Morrison-Knudsen Co. are building the huge Norfork Dam. A flood control project, it is also a future source of power. The expected completion date is July, 1944.

About 1,500,000 cu. yds. of aggregate will be needed. To produce it, this combination quarry and sand-gravel plant was designed by Telsmith engineers. And all its machinery, except some conveyors and electrical equipment, is Telsmith-built.

Six 10-yd. trucks haul the limestone rock from quarry to plant. The plant's rock-crushing section turns out 140 cu. yds. per hr. Three sizes of product are made: 6"-3", 3"-1½", and stone dust.

35 bottom-dump cars, each of 140,000 lb. capacity, haul the ma-

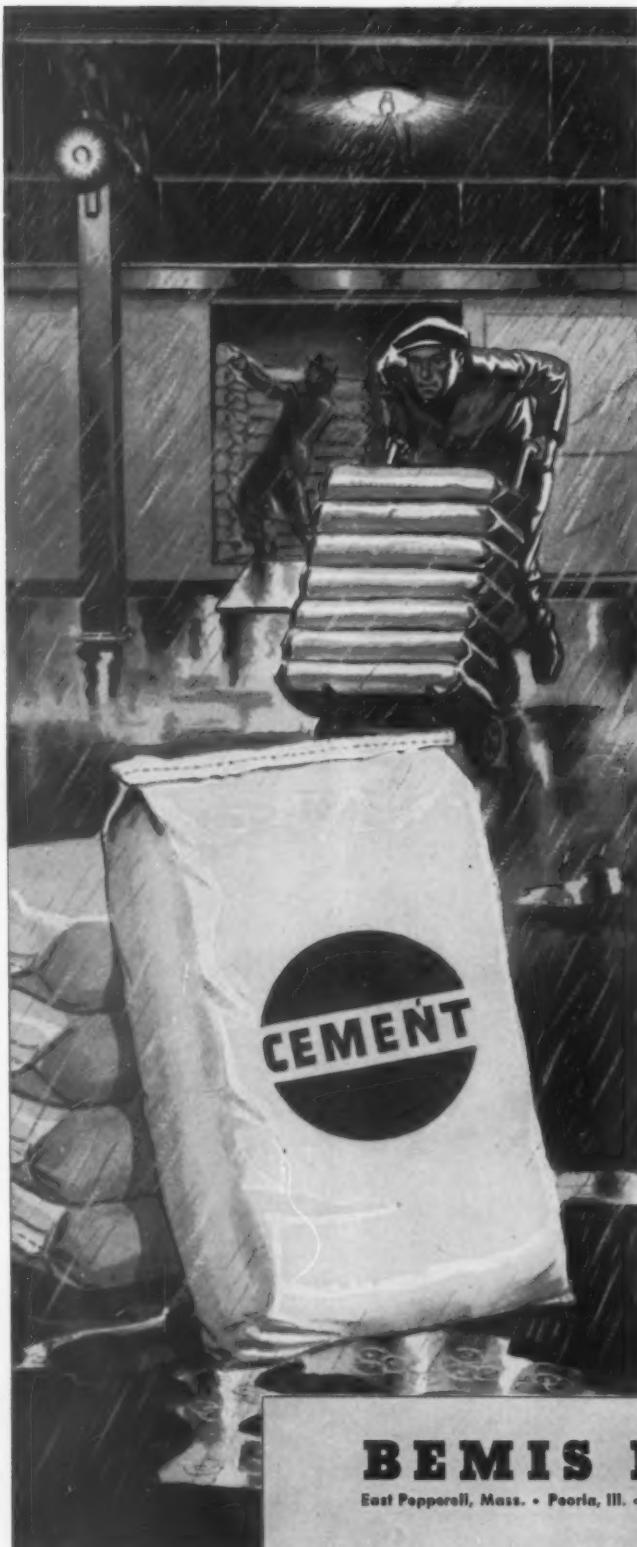
terial from the White River gravel bars to the plant. Its sand-gravel section has a capacity of 260 cu. yds. per hr. and makes 4 sizes—3"-1½", 1½"-¾", ¾"-4 mesh, and minus 4 mesh sand.

The plant's combined aggregate capacity is 8000 cu. yds. per 20-hr. day. Exceptionally efficient design, combined with automatic inter-coupled controls, make it possible to operate this large and complete aggregate plant with only about six men. Uninterrupted performance of Telsmith equipment has made it possible to exceed the planned concreting schedule.

Today's Telsmith Plants are producing under pressure, to win the war. Tomorrow's Telsmith Plants will do an even better job for you, at still lower over-all costs. Get Bulletin EP-11. Q-6

SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London
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TRY THIS!

and prove to yourself that
**BEMIS MULTIWALL PAPER
BAGS** are showerproof

TAKE a Bemis Multiwall Paper Bag, filled with your cement, and set it out in the weather. Let it rain...let it pour! (If the air is filled with sunshine around your plant, use a hose to simulate rain.)

After you're convinced that the bag has been in more weather than it ever will have to stand in ordinary use, let it set 'til it's dry. Then open it, and see how freely the cement pours out!

Protection against sudden showers is only one advantage of using Bemis Multiwall Paper Bags to package your cement. You'll find that these containers are economical...that they have strength to reduce lost time due to breakage on the production line...that they have ruggedness to protect your product in transit and on the job.

We'd like to have you know about the qualities of Bemis Multiwall Paper Bags before you place another bag order. So, we suggest you try this experiment soon. We'll send sample bags for the trial, if you'll ask for them. No charge and no obligation, of course.

BEMIS BRO. BAG CO.

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HELPING his OLDER brother



HE BELONGS to a large family of wonder workers.

They are men of faith who perceive not only the difficulties, but ways to surmount them.

The Oldest Brother of the family is more than 5000 years old.

He built the walls of Babylon—and made catapults to breach them. He is now more active than ever before. His name is Military Engineering.

His business is to destroy—from as far off as he can, as swiftly as he can, while keeping his own as safe as he can. His inventions are marvels of speed and might.

Quite as wonderful, and in some ways more so, are the factories that make them.

A Younger Brother works on the machines of destruction and in the

factories that make them.

He is a youngster, something over a century old. He built the steam engine, machine tools, the internal combustion engine. His name is Mechanical Engineering.

He founded this company 50 years ago. Here under the name of Rex Mechanical Engineering—Rex M. E.—one of his major tasks is to provide his Oldest Brother with means for making combat material.

As in the years of peace, Rex M. E. still designs . . . manufactures . . . applies . . . sells and maintains material handling equipment.

While working to bring V-day nearer, Rex M. E. is learning many things that are helpful now—and will be afterwards—for moving, carrying, lifting or lowering bulk materials intermittently or continuously.



MATERIALS HANDLING EQUIPMENT
Units . . . Assemblies . . . Installations



CHAIN BELT COMPANY OF MILWAUKEE

HOW TO KEEP YOUR ROCK DRILLS *on the Job*



Starting up a new drill—When you receive your new rock drill, paving breaker, or other air tool, first fill the oil pocket with a good grade of light rock drill lubricant, S. A. E. 20 viscosity in winter, 30 viscosity in summer. Be sure to blow out the hose before connecting. A shot of oil in the air inlet before hooking up does no harm. Make certain you have removed all wooden or metal plugs the manufacturer has placed in the external ports to keep out the dirt while the machine is on its way to you.

Lubrication—We cannot repeat too often — be sure to lubricate the drill before starting it. A machine void of oil will run for a short while, but eventually will heat up and stick. Be sure to blow out the hose before connecting. Bits of rubber or other trash may cause the valve or piston to stick. Lack of oil may result in a "scuff" or "pick-up" which must be removed before the drill will run right again. Read our "Driller's Handbook" for directions as to what to do in such instances.

* First in a series of advertisements telling how to get maximum work out of your drills, with minimum expense for repairs and compressed air. Send for the whole series, ask for "Cleveland Cartoons".

BUY WAR BONDS

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CANADIAN DISTRIBUTORS
Purves E. Ritchie & Son, Ltd., 658 Hornby St., Vancouver, B. C.
Whitehall Machine & Tools, Ltd., Galt, Ontario



Don't use heavy oil—For hand-held rock drills, paving breakers, clay diggers, and back fill tampers, the oil must be light — 20 viscosity S. A. E. in winter, 30 viscosity in summer. Don't use heavy, dirty, or inferior lubricants.

THE CLEVELAND ROCK DRILL COMPANY

Subsidiary of The Cleveland Pneumatic Tool Company

CABLE ADDRESS: "ROCKDRILL"

CLEVELAND, OHIO

LEADERS IN DRILLING EQUIPMENT

The Care and Feeding of Rock Crushers



No. 2 of a series of advertisements in the interests of national economy to aid users of crushing equipment unable to secure new units during the emergency.

Reverse Worn Jaw Plates for Maximum Service

Jaw plates are made reversible so they can be turned end for end when the lower end becomes worn. Jaw plates should be reversed as soon as they have become worn to a point of decreasing plant capacity — worn jaws will not grab and crush material. They cause material to slip and accelerate wear. Too, wear forms pockets at base of jaws preventing release of material and decreasing capacity. Cheek plates and wedges should be reversed, too (older models of equipment do not allow for this change) when jaws are reversed, for maximum efficiency and service.



UNIVERSAL ENGINEERING CORP.

Formerly the Universal Crusher Co.
617 C Avenue West
CEDAR RAPIDS, IOWA

WE ARE HELPING ALL WAYS!



We signed up early for the 10% War Bond Purchase Plan; we are building rock crushers and equipment for surfacing air base runways and we are army ordnance contractors.



Repair or Replace Jaws When Both Ends Are Worn

Most worn jaw plates can be salvaged by build-up welding and the use of filler bars. Only a few inches of jaw plate should be welded at a time to avoid warping the parent metal. Be sure to use a good manganese steel welding rod, applied in accordance with maker's recommendations.

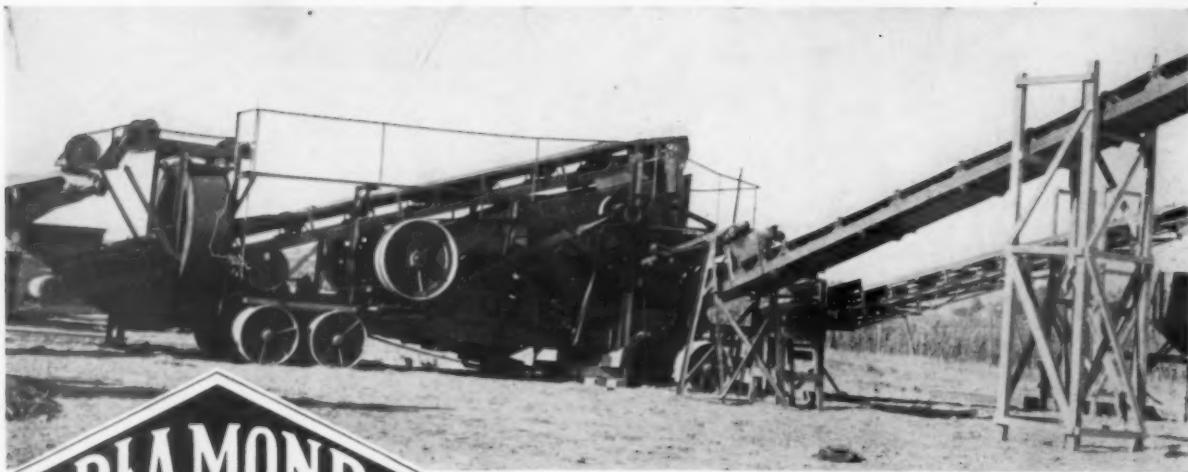
We will be glad to recommend suitable welding electrodes, filler bars and best salvage welding methods on receipt of details covering type and make of equipment, nature of material worked and welding equipment available.

You boost production when you keep corrugations at the lower end of the jaws—you conserve vital metal when you build up worn jaws.

④

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS



**When Contractors and Quarrymen Need
Maximum, NON-STOP Production—**

they specify a DIAMOND PLANT

RECORDS LIKE THESE SPEAK FOR THEMSELVES

1942—S.W. Ordnance Job

A Diamond No. 95 Plant is turning out
4,000 TO 6,000 TONS PER DAY
on a one million ton aggregate project. You
can't do that without BIG capacity, and the
toughest kind of "no-shut down" dependa-
bility.

1941—Big Western Ordnance Job

producing 2" minus crushed gravel for road-
way sub-base and railroad ballast. DIAMOND
No. 95 plant.
Started—May 12, 1941
Finished—November 6, 1941
Calendar time—179 days, 24 hours a day,
7 days a week—total elapsed time—4,296
hours
Scheduled operating time—3920 hours
Actual operating time—3320 hours
or 84% OF SCHEDULED TIME
Aggregate production—463,223 cubic yards
119 cu. yds. per scheduled hour for entire
period
139 cu. yds. per actual operating hour.

DIAMOND PORTABLE PLANTS IN MANY SIZES AND TYPES

QUARRY PLANTS—port. and sta.
No. 20—Portable, non rotor-lift
No. 36—Portable, rotor-lift
No. 65—Portable, rotor-lift
No. 95—Portable, rotor-lift

Portable washing-screening Plants
Portable and stationary Crushers
Vibrating, rotary and scalping
Screens, Conveyors, bins, feeders,
etc.

4,000 tons per day! 7 months' continuous run!
Operating time 84% of scheduled time! Re-
sults like these don't grow on trees, but they
do reward the good judgment of men who
select DIAMOND "ROTOR-LIFT" Plants for
the biggest and most urgent assignments in
America's vast War program.

The Exclusive DIAMOND "ROTOR-LIFT" Gives You Unequalled Advantages

Each unit in the DIAMOND portable plant—jaw
crusher, roll crusher, vibrating screen, conveyors—is
a proven veteran, individually. In addition, the com-
plete DIAMOND Plant is designed as a synchronized
unit, perfectly balanced for smooth operation and maxi-
mum capacity, ruggedly built for long, non-stop service
with an absolute minimum of stoppage for maintenance.

WRITE, WIRE OR PHONE for complete informa-
tion and prices on plants or any individual units
or installations. Our engineers will gladly help
you to solve any crushing, screening or convey-
ing problems.

DIAMOND IRON WORKS, INC.

ESTABLISHED 1880

AND THE MAHR MANUFACTURING CO. DIVISION
1800 Second Street N.

MINNEAPOLIS, MINN.





★ ★ ★ ROCK PRODUCTS ★ ★ ★

MUST
POINTERS
FOR EVERY
OPERATOR

NEWS
FLASHES

COMMENTS
BRIEFS &
INDUSTRY
HIGHLIGHTS

CONCRETE-PAVED AIRPORTS OF THE FUTURE!

Cleveland, Ohio: Competent authorities estimated sand and gravel production in 1943 would be from one-half to two-thirds of 1942 production. That, compared to years prior to 1940, would be still a good year. Moreover, confidential inquiries are being made in some sections of the country, as to the ability of existing plants to meet anticipated demand. It appears that certain new airports to handle the biggest bombers and transport planes are in the offing. The yardage of very thick concrete pavement that these jobs will require for runways, exceeds all dreams of producers.

NEW WAGE AND SALARY FIXING BODY

Washington, D.C.: This very important piece of news came out of Washington, January 31: The board of directors of the Tennessee Valley Authority was authorized by the War Labor Board to approve or disapprove applications for wage and salary adjustments for employees of contractors engaged in its construction work. The order broadened previous authority for the T.V.A. board to rule on wage and salary adjustment for its own 41,000 employees. In ruling on adjustments of wages for employees of contractors, the T.V.A. board must approve them only if they fix the same wages and salaries as those of T.V.A. employees. T.V.A. disapproval will not preclude application to the War Labor Board.

RECORD-BREAKING CEMENT CONSUMPTION

Washington, D. C.: Shipments of portland cement in 1942, according to preliminary figures of the U. S. Bureau of Mines, were 185,167,000 bbl. compared with 167,439,000 bbl. in 1941. Missouri, Nebraska, Kansas, Oklahoma, Arkansas, Texas and California are the states that had the largest increases. Texas and California were plenty active in 1941, but the increases in the other states have helped tide them over what appeared in 1940 to look like slim picking in war construction.

NEW MARKETS FOR STANDARD PRODUCTS

New York City: Nylon is not the only product that has great possibilities in the post-war days to come. Even humble rock products will find new markets. For example, because of the shortage of lumber and plywood the U. S. Navy's Camp Bainbridge, Md., is built with 1/4-in. asbestos-cement sheets substituted for the 5/8-in. plywood originally specified for exterior sheeting. Asbestos-cement sheets are used for the exteriors of all buildings, and for interiors of washrooms and stairways. It is also used as a wainscot up to a height of 4-ft. in mess halls, schoolrooms and hospital wards. Gypsum wallboard is used for all other interior walls and for ceil-

ings. "Engineering News-Record" for January 28, says these "thin asbestos sheets over plaster board and tarpaper provide an attractive, fireproof (fire-resistant?) wall at a cost of 15 cents per square foot for materials and labor." Obviously, if the building trades' labor unions give them a chance, these materials are likely to find an extensive market in the post-war building boom.

"WOMEN AND NEGROES"

Washington, D. C.: There is a rapidly growing shortage of drivers for heavy trucks. Otto S. Beyer, director of the division of transport control, O.D.T., says the shortage must be met largely by training "women and Negroes." (That link ought to please the ladies. Maybe the Eleanor Clubs down South could help open up some Chauffeurs' and Teamsters' Union locals.)

CONSTRUCTION PROJECTS BEING STOPPED

Washington, D. C.: Following the policy of curtailing construction which does not contribute directly to the war effort, the War Production Board announced recently that projects having a total cost of \$56,344,612 were stopped during the week ended January 22. This brings to \$1,271,195,509 the total cost of all projects which have been stopped either by the programming agency or the War Production Board since October 23, 1942, when the Facility Review Committee of W.P.B. was established to reappraise the essentiality of construction projects.

PAGE HARRY BRIDGES!

Sacramento, Calif.: An alarming increase in amounts of broken glass and jagged fragments of bottles on main traveled highways, particularly strategic roads in the vicinity of defense plants and army encampments, has aroused in the mind of State Highway Engineer C. H. Purcell a suspicion that deliberate sabotage may be involved. Deplorable conditions are reported in the San Diego, San Luis Obispo, Monterey and San Francisco Bay Area and other districts. "The Division of Highways," Mr. Purcell said, "is doing everything possible, handicapped as it is by a shortage of manpower, to cope with the situation, but we must have the full cooperation of the Army, Navy, defense plants and the citizens of California."

LESS INDUSTRY OPPOSITION TO COLLECTIVE BARGAINING

Washington, D. C.: The National Labor Relations Board, in its annual report for the fiscal year ending June 30, 1941 (recently issued) says that the nature of cases before it in the past fiscal year indicated an "increasing acceptance" of the Wagner Act by employers: that for the first time representation cases exceeded cases in which unfair labor practices were alleged. It was the Board's busiest year. Of the 10,977 new cases filed, 6010 were representation cases, an increase of 39 percent over the preceding year, while 4967 were alleged unfair labor practice cases, an increase of only 3 percent. "The increasing preponderance of representation cases," said the Board, "reflects a highly significant change in the character of the work of the Board, an indication of the increasing acceptance of the act by employers. Relatively less of its work now relates to the prevention of unfair labor practices, and more to the orderly determination of representatives for collective bargaining." To determine representation for collective bargaining purposes, the Board has been conducting elections or making payroll checks at the rate of more than 10 a day.

The Staff



W
A
Bu

Don't WASTE MAN-HOURS AND CRITICAL MATERIAL Building Special Enclosures

...there's a **STANDARD**
G-E combination starter
to meet every operating
condition



FOR HAZARDOUS LOCATIONS

The Type 7 case for Class 1, Group D, locations is made of cast, high-strength alloy. These starters can withstand internal explosions. The flanges, which are securely bolted on all sides, are ground to tolerances that will not permit the escape of hot gases.

WATERTIGHT

The Type 4 case is suitable for outdoor use, and for installations in damp places indoors, such as in dairies and breweries.



The Navy "E", for Excellence, has been awarded to 92,280 General Electric employees in six plants manufacturing naval equipment.

CORROSION-RESISTANT

These starters (Type 8) are made in two forms—one for corrosive atmospheres and one for hazardous locations. All their arcing parts and terminals (for use in hazardous locations) are at least six inches under oil.



GENERAL-PURPOSE

The Type 1 enclosure is suitable for general-purpose, indoor applications where atmospheric conditions are normal.



DUST-TIGHT

The Type 5 enclosure is for use in steel mills, cement mills, and other locations where the dust content of the atmosphere is so heavy as to make a dust-tight case desirable. The cases are of heavy sheet metal, equipped with heavy gaskets, clamping bolts, and wing nuts.

Order **STANDARDS** to save time and material

NEVER ENOUGH production time—scarce material urgently needed! Both far too valuable to be spent in building unnecessary control rooms and special enclosures.

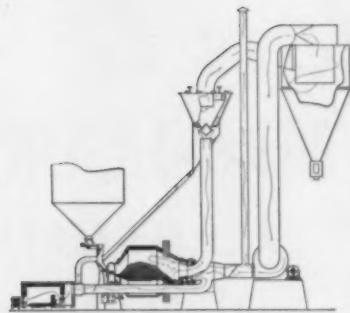
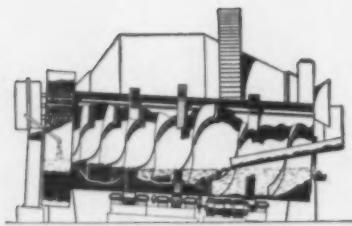
But delivered-ready-to-install control isn't all that the General Electric line of standard combination starters offers you.

These starters combine two devices—a fused motor-circuit switch and a magnetic starter—in one compact unit. This saves you one complete mounting job. They come to you completely wired and ready to install—saving all the time and material needed to wire up two individually mounted controls.

If you wish, our local sales engineers will help you select the proper starter for your job from this standard line of G-E combinations—for a-c motors up to 200 hp. *General Electric, Schenectady, N. Y.*

GENERAL  **ELECTRIC**

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Wet versus Dry Grinding

A Few Facts Most Mill Users Do Not Know!

1. Do you know that power to grind wet is less than to grind dry but this advantage may be more than offset by the very low ball and liner consumption of the same mill grinding dry?
- 2.—that you can secure a better graded product when grinding dry?
- 3.—that you can dry and grind simultaneously?
- 4.—that if the product is to be acid treated, leached, or if water is scarce, dry grinding may be preferred?
- 5.—that some physical or chemical action grinding dry has, in many cases, increased extraction?
6. Do you know that when grinding wet, in closed circuit with the Hardinge Counter-Current Classifier, you have a positive control of your fineness and that the Classifier maintenance is next to nothing?
- 7.—that a short cylinder Conical Mill grinding either wet or dry eliminates dead zones, thus increasing grinding rate and insuring a close control of sizing?

Write for Bulletins 13-D, 39-A and 41

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CONICAL MILLS  **COUNTER CURRENT CLASSIFIERS**  **THICKENERS CLARIFIERS**  **RUGGLES-COLES DRYERS**  **CONSTANT WEIGHT FEEDERS**  **TUBE ROD AND BATCH MILLS** 



Here Is **Why** the Belts You Use

Should be Built with the

CONCAVE SIDE !

A very simple test (pictured above) will show you the great importance of the Concave side. To make this test, take *any* V-Belt and bend it as it bends in going around its pulley. With your fingers, grip the sides of the bending belt. You will feel those sides *change shape*. Fig. 1, (on the right) shows what this shape-change does to a *straight-sided* V-Belt. Note the out-bulge of the sides.

Now look at Figure 2. There you see how *differently* the same shape-change affects a V-Belt built with the patented Concave side. The Concave side merely becomes straight—and this makes the bending belt exactly fit its sheave groove. There is no side-bulge. This means that wear is distributed *evenly* over the *whole side* of the belt—insuring longer life! Also, the whole side of the belt uniformly grips the sheave wall. This means heavier loads are carried without slippage—a real saving in belts—which conserves one of the nation's vital resources—rubber!

Only belts built by Gates are built with the Concave side, a Gates patent.

What Happens
When a
V-Belt Bends



FIG. 1



FIG. 2

431

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

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Denver, Colo.
990 South Broadway

Dallas, Tex.
2213 Griffin Street

Portland, Ore.
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1090 Bryant Street



Finer CRUSHING Greater OUTPUT

Many plants engaged in the production of crushed stone, gravel, slag and various industrial minerals are handicapped due to the inability to produce the more finely crushed sizes in sufficient quantity to meet today's emergency demands. Where such conditions prevail, the answer will be found in the installation of a Symons Cone, the Crusher now serving most modern crushing plants engaged in fine crushing operations.

If you require greater output of more finely crushed materials, follow the example of the leaders in the industry who are users of Symons Cone Crushers.



NORDBERG MFG. CO.
MILWAUKEE WISCONSIN
NEW YORK • LOS ANGELES • LONDON • TORONTO

SYMONS CONE CRUSHERS



Enlarged reproduction free on request

Servant of Freedom

Mighty servant of all America is the great Construction Industry. Now during the war it is helping to crush our enemies. With victory Construction will again serve the peace-time progress of free men.

Already America's vast network of highways, bridges and airports is helping to free men from barriers of distance, time and transportation costs . . . massive dams are making low-cost electricity available to more and more millions, lifting old burdens . . . vast aqua-

ducts and sanitation systems are contributing to our people's health.

With the return of peace, Construction will bring in its train ever new and greater contributions toward the better life for all.

* * *

Wickwire Rope is proud of the privilege of helping the Construction Industry in its engineering accomplishments . . . in quarries, on highways, in the building of dams, bridges, and structures of all kinds.

A CHALLENGE

The present shortage of steel, and of wire rope, challenges each member of the Construction Industry to make each length of wire rope now in service last longer than ever before. Every man who uses or handles wire rope can help.

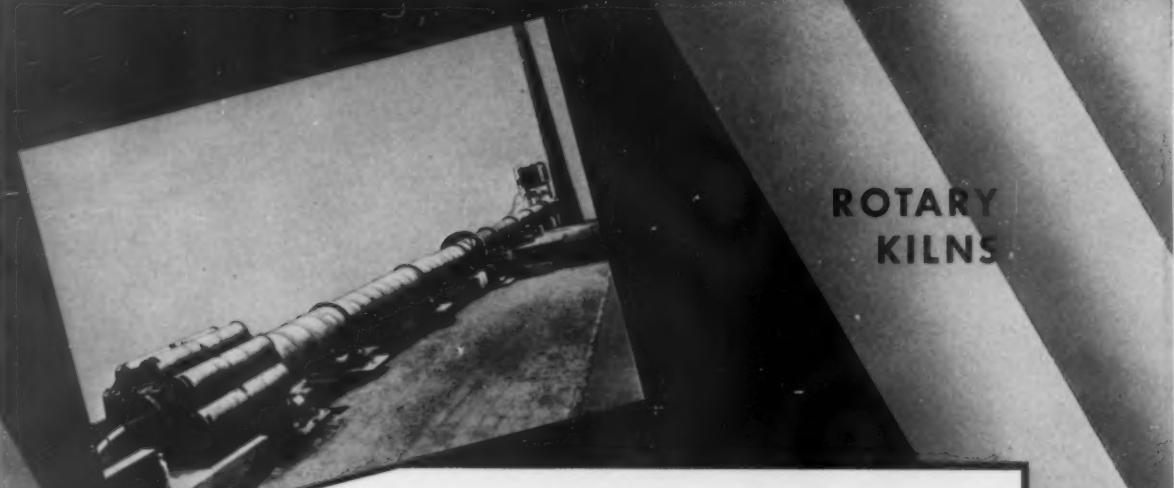
We will be glad to furnish free copies of the helpful book "Know Your Ropes," which pictures the right and wrong ways to use wire rope. **TAKE UP THE CHALLENGE—WRITE FOR YOUR COPY—AND MAKE SURE ANY NEW MEN KNOW THE RIGHT WAYS.** . . . Address Wickwire Spencer Steel Company, 500 Fifth Ave., New York, N. Y.



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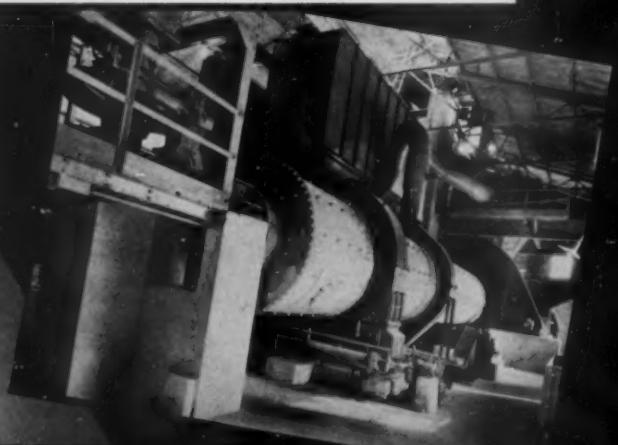




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KILNS

Machinery for Cement-Lime-Ore

In addition to a complete line of Rotary Kilns and Grinding Mills, F. L. Smidth & Co. also manufacture Coolers, Pre-Coolers, Pre-Heaters, Recuperators, Air Separators, Agitators, Packers, Extractors, Feeders, Burners, etc. and their auxiliary equipment, for the manufacture of Cement, Lime, Ores, and Allied Products



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MILLS

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CEMENT ENGINEERING
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NEW YORK, N. Y.

Here is a Feature



... you are going
to want after the "DURATION"



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VICTORY
NORTHWEST

THESE are the swing clutches of a Northwest shovel. They are different in that they are Uniform Pressure Clutches and they insure smooth action—uniform pressure, free from grabbing under all conditions. Remember no band clutch either inside or outside can be a uniform pressure clutch. This is only one of the many Northwest features with which you should familiarize yourself in prospect of replacing worn out equipment after the "duration"—when you can buy Northwests again.

Buy War Bonds and plan for a more profitable future.

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NORTHWEST

IF YOU PLAN FOR
A REAL ROCK
SHOVEL, YOU'LL
NEVER HAVE TO
WORRY ABOUT
OUTPUT IN DIRT!



.... **Mister Edison** **was having trouble**

IT WAS back in 1891. Thomas A. Edison had invented a magnetic separator for the concentration of low grade iron ore. He had also created new processes for crushing and briquetting the ore. Now, all he had to do was start production.

But he ran into unexpected difficulties. Not with the separator, or the crusher, or the briquetter. His problem concerned something extraneous . . . but essential. He had conveyor trouble. He had expected to use the only types of conveyors then current: scraper and gravity bucket. Neither of these had ever been called upon to handle abrasive materials (which had always been moved in cars) or to attain the required speed (200 TPH). They failed completely.

Mr. Edison next tried a daring experiment. He used a *belt* conveyor. Up to then, belt conveyors had been restricted to carrying grain. They were thin, had no special cover, and were run flat on wooden idlers. Naturally, they wore out quickly. Another experiment seemed doomed to failure.

The First Belt Made Especially for Conveying Materials

ABOUT that time, a man named Thomas Robins called on Mr. Edison. Being a salesman for a rubber company—and, himself, a pioneering spirit—he was

interested in this attempted new use for a rubber product.

After looking over the plant and analyzing the handling problem, Mr. Robins believed that a conveyor belt could be created specifically for the purpose.

In fact, Mr. Robins astonished the great inventor and his colleagues by stating that a piece of rubber, when exposed to the heavy falling stream of crushed ore, would outlast many times its own thickness of the hardest steel. What was more, he could prove it.

Then Mr. Robins ran into difficulties. The company he represented would have nothing to do with such a "crack-brained" idea. But he persisted and finally found a concern willing to produce a belt to specifications. Thus was created the first belt made especially for conveying materials.

From that humble beginning and single idea has grown the present firm of ROBINS . . . long the leader, ever a pioneer in modern materials handling machinery. Submit your problems to ROBINS.

For Material Aid in Materials Handling...It's ROBINS

ROBINS
CONVEYING BELT COMPANY
PASSEIC • N.J.

WAR ESSENTIAL CONVENTIONS?

THE AGGREGATES INDUSTRY is threatened with the first serious difference of policy in several years of harmonious relations between the competitive groups. Last December 15 Joseph B. Eastman, director, Office of Defense Transportation, issued a statement which was published in all the newspapers, asking that all convention plans be abandoned unless the holding of such a meeting or convention would contribute in an important way to the winning of the war, or, in other words, would help to shorten the war.

Taken literally and seriously that is a pretty tough specification for any association to meet; and Mr. Eastman said in his statement that he recognized it as such. The directors of the National Crushed Stone Association did take Mr. Eastman's statement literally and seriously, and after consultation among themselves, by meetings, by telephone and by telegraph, they decided that the association's 26th annual convention, scheduled for Cleveland, Ohio, January 26-28, could not be conceived of as shortening the war, regardless of how important it seemed to them not to break the continuity of its 25 years of annual meetings.

Mr. Eastman was informed of the action of the board of directors and, on January 8, he replied: "Your action indicates cognizance of the need to conserve on transportation wherever possible and is directly in harmony with the policies of the Office of Defense Transportation. May I congratulate you on this decision. It is very helpful to us in our work to provide transportation for essential war-impelled traffic." The directors of the National Crushed Stone Association had every reason to believe they had rendered a patriotic service.

After his December 15 statement to the press, someone called Mr. Eastman's attention to the fact that federal government officers and employes appearing on industrial convention programs were often the principal drawing card, or star features. So, on January 13, after having congratulated the crushed stone industry on foregoing its convention, he wrote a general letter "To All Government Agencies" in which he urged careful scrutiny by the agency head of all requests for convention speakers, but wound up with this paradoxical statement: "We are aware that some meetings advance the war effort; others provide a bona fide opportunity for dissemination of vital government information and as such are justified."

Since the National Crushed Stone Association convention at Cleveland was to have shared numerous federal government speakers with the National Sand and Gravel Association, meeting in the same city, the



same week, it seems quite obvious that had Mr. Eastman expressed his January 13 sentiments in his December 15 public statement, or even in his letter to the president of the National Crushed Stone Association of January 8, the action of the directors of this association in regard to the indefinite postponement of their annual convention might have been different.

However, if the directors of the National Crushed Stone Association were misled by Mr. Eastman's request of December 15, they are in good company, for the American Road Builders' Association, the Associated General Contractors, the American Railway Engineering Association, the American Concrete Institute, and other similar associations also canceled plans for their annual conventions.

The directors of the National Sand and Gravel Association and of the National Ready Mixed Concrete Association conferred with one another, and with their executive secretary, and decided to proceed with their concurrent annual conventions—as a war industry conference. The fact is, of course, that many of them are in much closer and more direct touch with government war agencies than their crushed stone industry friends, particularly is this the case with many producers of ready-mixed concrete, who are serving "hurry up" government construction projects. Anyhow, it is apparent that they did not accept Mr. Eastman's December 15 announcement quite so literally as did the directors of the National Crushed Stone Association.

It only remains to be said that the Cleveland conventions of the National Sand and Gravel Association and the National Ready-Mixed Concrete Association were highly successful, both in the matter of attendance and in the vitally helpful information disseminated. Although we were skeptical that these conventions could be justified under a literal interpretation of Mr. Eastman's December 15 statement, we are now convinced that conducted as these conventions were, they were justified. Evidently Mr. Eastman himself considered one such convention justified for he spoke himself at a meeting of rural electrification engineers in St. Louis the week of January 15. It's hard to see where rural electrification is a war industry, in view of the scarcity of copper; and perhaps he was justifying his own speaking trip to this convention when he hedged in his letter of January 13 "To All Government Agencies."

NEWS ABOUT PEOPLE

Leaves for Army

HENRY CROWN has resigned as Chairman of the Board of the Material Service Corp., Chicago, Ill., to enter the Army as Lieut. Colonel in the U. S. Engineering Corps. He is



Lt. Col. Henry Crown

the 97th member of the Material Service organization to enter the armed services, which includes his son, Ensign Robert Crown, and Captain Stuart S. Colnon, a vice-president of the company. In a letter addressed to the employees of the firm, Lieut. Colonel Henry Crown calls attention to the fact that although the late Colonel Horatio B. Hackett's position as president of the company has not yet been filled, no company sacrifice is at all important as compared to any possible help toward the War Service.

President Mica Concern

DALE L. PITTS is now president of the Colonial Mica Corp., Metals Reserve Co. subsidiary, whose headquarters are at 92 Liberty St., New York City. The company has been organized to secure a supply of domestic mica to take the place of that formerly imported. Mr. Pitt has recently been on a trip through the West, but makes his headquarters in New York, as does Raymond B.

Ladoo, who is also now connected with the company. Hubert O. De Beck, until Sept. 15 chief of the mica section of W.P.B. in Washington, is in charge of the Western area for the company and is making his headquarters at Custer, S. D.

Woman Sales Manager in Sand Business

CATHERINE F. BRYANT, secretary and sales manager of G. W. Bryant, producer of core sand at McConnellsville, N. Y., has made a success of the industrial sand business. Her career in some respects parallels that of Mrs. Dunkin, head of Silica Products, Inc., Guion, Ark., whose life story appeared in the September, 1942, issue of *Rock Products*. Miss Bryant had the responsibility of running the business thrust upon her through the death of her brother.

The business was purchased in 1921 by her father, George W. Bryant, Sr., from Mr. Gifford, the original and only McConnellsville sand miner at that time. Mining was done by hand, and the material hauled by horse and wagon. Mr. Bryant put in



Catherine Bryant

a railroad siding and slackline cable-way reclaiming system, greatly increasing production. The business was operated by Mr. Bryant until his death in 1930, when George, Jr., his eldest son, took over and operated the business for Mrs. Mary A. Bryant, his mother. In 1936 George Bryant, Jr., died, and his sister Catherine took charge of operations with the help of John Coonrod, who had been with the company since it was organized.

With the help of Mr. Coonrod, Miss Bryant learned about the different grades of sand, bank trimming, topping removal, operation of equipment and all the numerous duties that are a part of core sand mining. These duties with the office work and sales kept her busy. In 1938 her younger brother, Jack, finished high school and went to work as a day laborer in the mines. In the Fall he left for college to study mechanical engineering. The next summer he returned to the mines as a laborer, working his way up to manager in 1941. His promotion relieved Catherine Bryant of these duties and allows more time for the duties of secretary and sales manager. Miss Bryant's success in no small measure comes from the fact that she has taken a keen enjoyment in working in the sand business, and has found it a pleasure to cooperate with others in the business through the National Industrial Sand Association.

U. S. Lime Changes

STANLEY ARNOT, superintendent, United States Lime Products Corp., San Francisco, Calif., has been appointed consulting engineer, succeeding John Mocine, who has retired. Mr. Mocine was for many years the company's engineer at the Sonora plant. M. E. NEWLOVE, superintendent of the North Star Mine of the Newmonte Corp. in Grass Valley, is taking Mr. Arnot's place as superintendent.

General Sales Manager

JAMES F. TWAMLEY, vice-president in charge of sales, Coplay Cement Manufacturing Co., New York, N. Y., has retired, and Peter J. Loughran has been appointed general sales manager, with headquarters in New York, N. Y.

In the Navy

WESLEY P. BLIFFERT, engineer, Tews Lime and Cement Co., Milwaukee, Wis., has received a commission as Lieutenant, junior grade, in the Navy Civil Engineering Corps and is stationed at Camp Allen, Va.

NEWS ABOUT PEOPLE

Wolverine Appointments

C. STILSON has been elected chairman of the board of the Wolverine Portland Cement Co., Coldwater, Mich.; R. C. GLEASON was named executive vice-president; J. L. NELSON, vice-president and sales manager; J. SCHAFFNER, comptroller; W. L. BROWN, secretary; and Miss F. E. Root, treasurer. The following members were elected directors for the ensuing year: M. D. Dutcher; T. M. Green; A. J. Joyce; S. M. Kanarick; C. D. McKenzie; J. L. Nelson; H. A. Schwerin; C. Stilson; and G. E. White. Carlton D. McKenzie, president of the McKenzie Milling Co., Quincy, Ill., who has just been appointed as consultant to the Office of Price Administration, Washington, D. C., was elected a director, replacing F. H. Flandermeier. G. E. White of Grand Rapids was elected in place of his law partner W. H. Messinger.

Succeeds Father

C. STUART FIELDING has been elected president of Screen Equipment Co., Buffalo, N. Y., succeeding his father, the late A. E. Fielding.

Director of Purchases

R. C. WIETERSEN has been appointed director of purchases for The Buda Co., Harvey, Ill. Mr. Wietersen is well known in the engine industry. For the past two years he was director of purchases for the National Supply Co., Springfield, Ohio. For four years prior to that he was with Hercules Motors of Canton, Ohio, as their director of purchases. He spent 13 years with



R. C. Wietersen

Studebaker Corp., South Bend, Ind., of which ten of these years he was assistant purchasing agent.

With W.P.B.

JOHN C. MINOR has been granted a leave of absence from Taylor-Wharton Iron and Steel Co., New York, N. Y., to accept a position as consultant on gas cylinders with the War Production Board.

Heads Florida Gravel Company

ROBERT G. LASSITER is president of the Seminole Rock and Sand Co. with offices at 1114 Congress Bldg., Miami, Fla.

In Charge of Production

ROBERT DAVIS has been appointed engineer in charge of production of the Stearns Manufacturing Co. at



Robert Davis

its plant in Adrian, Mich., and WALTER G. SCHUTT will be engineer in charge of research. Mr. Davis is widely known to concrete manufacturers due to his long connection with the Stearns organization. He has served the company in many capacities and has assisted in the installation of production equipment in many of the country's most successful products plants. Mr. Schutt, a graduate of the School of Mechanical Engineering, Purdue University, served as chief engineer of Oliver Instrument Co., Adrian, Mich., for seven years. He has a wide circle of acquaintances in the concrete industry. His experience in the design of concrete machinery has been enriched by his eight years' connection with the old Anchor Concrete Machinery Co. and Consolidated Con-



Walter G. Schutt

crete Machinery Co. as chief engineer. In recent years he has done concrete engineering work in the field and most recently has been general superintendent for the Flint and Walling Co. of Kendallville, Ind.

Universal Promotions

RICHARD D. MAYNE, in charge of the quarries at the Hannibal, Mo., plant of the Universal Atlas Cement Co. for the past two years, has been appointed assistant to operating manager, New York. His previous service with the company included operation of the gypsum mine at Clarence Center, N. Y. ADAM B. REUTENAUER, assistant quarry foreman for several years at the Hudson, N. Y., plant of the company, has been appointed to succeed Mr. Mayne as quarry foreman at the Hannibal, Mo., plant.

Appointed to W.L.B.

V. P. AHEARN, executive secretary, National Sand and Gravel Association, has been appointed a member of the employers' panel of the National War Labor Board. That means he will represent the employers', or industry's side, in such cases as the W.L.B. needs assistance on. Representation on the board is from panels representing industry, labor and the public.

On War Labor Board

C. E. CARON, general superintendent, Trinity Portland Cement Co., Dallas, Texas, is a member of the advisory council of the War Labor Board in the southwest, headed by Floyd McGown as regional director.

HINTS AND HELPS

Mine Hoist Motor Serves As Generator and Brake

AN INTERESTING APPLICATION of a mine hoist motor which has the dual function of a brake and generator is to be found at the Poinsettia mine



Wound-rotor induction motor, 300-hp., serving as motor and generator for starting and braking coal haulage monitors on a 5000-ft. incline

of the Block Coal and Coke Co., Block, Tenn. There may be a number of places where a power unit of this kind may be used in the rock products field.

At this mine a G.E. 300-hp. wound-rotor induction motor serves as both motor and generator for starting and braking monitors on a 5000-ft. incline. A loaded monitor moving down the incline will pull an empty monitor to the top by its own weight. However, it is necessary to start the loaded monitor on its way since it starts from a relatively flat position at the top of the incline. To do this, the G.E. hoist motor pulls the empty monitor a short distance up the incline, and the slackening of the cable allows the loaded monitor to start on its way and accelerate to full speed.

If the descent of the loaded monitor were not controlled, however, it would continue to accelerate until a runaway and dangerous speed has been reached. For this reason, the hoist motor has been designed to pro-

vide regenerating braking when the pull of the descending monitor has speeded the motor to a point a few percent more than the normal 600 r.p.m. for which the motor is designed.

Should the operator desire the monitor to move faster, he can cut resistance into the secondary circuit by moving the handle of the cam-type master switch towards the OFF position. In this way, a speed up to 115 percent of normal can be obtained. A speed greater than this will actuate an overspeed device which cuts off the power and sets a thruster-operated brake. Monitors are normally stopped at the end of a trip by plugging the motor, the thruster brake being used for holding only.

Standard G.E. mine hoist control is used, consisting of a high-voltage primary reversing panel and a secondary magnetic panel. Power regenerated by the electric braking is returned to the 2300-volt line and is used for supplying power to substations and other equipment, thus reducing the purchased-power bill.

Elevator Maintenance-Costs Cut

By JACK F. PRUYN

A large new western plant, handling a very abrasive material found that they could not keep bearings around the bottom, elevator-pully axle. These bearings were usually submerged.

For example, the regulation babbitt bearing with a water-seal arrangement, as shown in Fig. 1, lasted about two months. A special bearing job, Fig. 2, consisting of half-round rubber flutes vulcanized into a solid casting, and a water-seal attachment was installed. The whole affair cost considerable, figuring a one day shut down along with the cost of ma-

terials. This special job lasted just about six months; meaning a costly shut down twice a year.

The irony of this problem lies in the fact that a little ingenuity-try and hope-you-run plant has had the solution to this lower elevator bearing problem solved for years. This little plant uses ordinary babbitt bearings, and water proof grease. The catch is that: Each bearing is centered in box-forms and covered entirely with tar as shown in Fig. 3.

Hydraulic Filter Pump

By WALTER B. LENHART

VACUUM FILTER installations after several years of operation often give trouble due mainly to insufficient vacuum which in turn is due to a worn out vacuum pump, for in spite of all precautions some fine slimes in the filtrate get into the valves of the pump and cause wear.

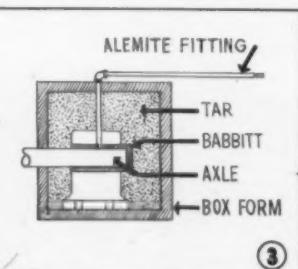
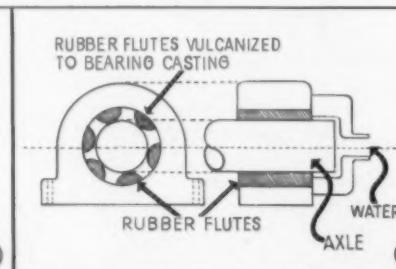
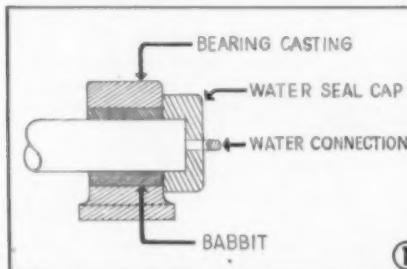
One company solved this trouble by replacing the motor driven vacuum



Hydraulic vacuum pump which replaces motor-driven pump

pump with a water suction device similar to that used in laboratories for rapid filtering. In this device there are no valves or moving parts whatsoever as the vacuum is supplied solely by hydraulic means.

To understand how the device works, the following explanation is given: If water under pressure is passed through an orifice that will give the water a rotary motion and at the same time break the water up into a spray, we have the start of a



Method of solving excessive wear on elevator pulley bearing. Fig. 1: Bearing with water-seal arrangement. Fig. 2: Special bearing. Fig. 3: Simple method solves problem

HINTS AND HELPS

water vacuum pump. Now if this spray is enclosed in a slightly larger, air-tight chamber we will have two forces; the water pressure tending to break up into a spray, and also a shortage or total lack of air to fill in the interstices between the water particles. To form this spray this air must come from some place, and in this device the air comes from, or through, the filter media.

The orifices in this device consists of eight $\frac{1}{4}$ -in. pipe welded into a solid plug. This plug fits into the feed water pipe which in this case is 4 in. in diameter. The small pipes are bent slightly to give the water a swirl. That part of the pipe holding the orifice plug is threaded on the outside for a distance of about 8 in. so that adjustments in the locating of the orifices can be regulated. This piece of pipe with its long thread screws into a second piece of slightly larger pipe. This piece is about $7\frac{1}{2}$ in. long and is welded into a bell-shaped chamber that is 8 in. in diameter and about 6 in. long. An opening in the side of this chamber connects with the filter.

When the device is assembled and water is passing through, screw the orifice plug (in or out) to get the maximum suction and then, by means of a 4-in. jamb nut, lock the orifice pipe in place.

Water at 80 to 12 p.s.i. is required and at a rate of about 50 gal. per minute for efficient work.

The hydraulic vacuum pump shown in the illustration operates a 4-ft. Oliver filter and maintains a 14- to 20-in. vacuum, and replaces the use of a 4- x 5-in. reciprocating vacuum pump. The installation has been in use for some time and has not caused a bit of trouble.

Electrical Car Dumper

At the new sand and gravel plant of Metropolitan Sand and Gravel Corp., Port Washington, L. I., New York, materials from a bank deposit are hauled to stockpiles near the processing plant in trains consisting of four 40-cu. yd. hopper-bottomed ore cars hauled by a Diesel locomotive. Standard gauge track extend out over 300 ft. of trestle under which 12,000 tons can be stockpiled for reclamation to the screening plant.

It is desirable to draw off material, for screening, from one end of the stockpiling area in preference to reclaiming by cross-belt from the other end, which is done only to make up deficits because the haulage equipment cannot keep up to the plant



Push-button switch controlling motor-driven chain drive dumps 40-cu. yd. capacity gravel cars

demands. To speed up the capacity for hauling, the discharge gates underneath the ore cars were designed for quick dumping electrically.

A small d.c. electric motor and the gate shaft were fitted with sprockets and a connecting chain—the motor to receive its energy from the Diesel locomotive. An attendant walks alongside the train on the walkway over the stockpiling area and merely presses a push button to dump the car. The chain winds on the sprockets to open the gate and there is an automatic cutoff when the gate is fully open. It is very quick—the train keeps moving slowly while the cars are being dumped.

CO₂ for Coal Storage Fires

NEW IS THE USE OF DRY ICE for extinguishing fires in the coal pile. An estimated 80,000,000 tons of bituminous coal is now in storage throughout the country, doubling the usual season's reserve. This likewise doubles the risk of loss through spontaneous combustion, notwithstanding the protective effect of modern methods of storage. One exhibitor at the recent Power Show in New York City offers the dry-ice treatment through the medium of 15-ft., 3-in. driven pipes with perforated tips. These pipes, charged with 50 lb. of the solidified CO₂, penetrate the hot spot in the coal pile. Heat liberates the gas to blanket the hot zone, the same action reducing the local temperature, and—"You can forget your hot spot" this exhibitor claims.

To locate the danger points in the pile the same exhibitor offers a hot-

spot indicator consisting of iron pipes containing a spring-loaded signal, held back by a chain with fusible links at one-foot intervals. Only the hottest link lets go and only when temperature rises to 150 deg. F. Thus the location and depth of the danger point are advertised 72 hours before combustion can take place, at the normal rate of temperature rise.

Extinguish Bombs With Fine Feldspar

FELDSPAR, ground to pass a 10-mesh screen and be retained by 200-mesh screen, has been found to be a cheap and easily obtainable material effective in extinguishing magnesium incendiary bombs. This new use for feldspar was determined through studies made by Geologist W. W. Rubey and Chemists Michael Fleischer and J. J. Fahey of the Geological Survey, Department of Interior. With a lower melting point than sand, feldspar quickly forms a protective coating over molten magnesium which cuts off the supply of air from the magnesium and actually stops it from burning and its flame from spreading.

Asphalt-Sand Mixture for Bomb Protection

AS A PROTECTION against possible bombing attacks, San Francisco has filled sand bags with a combination of sand and asphalt. The mixture is said to be highly resistant, can be tamped into shape, and within a short time becomes so stabilized that it will not run or disintegrate when the burlap bags are cut or rot away. Only about three percent asphalt is mixed with the fine sand.

Many Sizes For New York Market

New plant of Metropolitan Sand and Gravel Corp. provides enormous storage capacity of a variety of sizes with ample reclaiming facilities for blending and loading out

METROPOLITAN New York at times is an immense market for sand and gravel but subject to great fluctuations and intense competition. There is a need for a greater variety of sizes, in order to profitably operate under these conditions and a need for modernity in plant operation. Costs of production must be held down in big plants having extraordinary capacities to service peak periods, and yet these plants must be able to produce profitably when construction drops.

Metropolitan Sand and Gravel Corp., New York, N. Y., had a plant at Port Washington, Long Island, that has shipped as much as 25,000 tons daily in barges into New York City and other seaboard cities. The trouble with it was that the equipment was no longer modern, and the plant was designed to produce continuously heavy tonnages of just a few sizes.

Two grades of sand and one of gravel were produced. Most of the gradation was accomplished by dry screening over gravity screens. Sand from the Port Washington bank deposits contains very little loam, and the unwashed plaster and brick sand known locally as "Cow Bay" sand has always had wide acceptance. Some

By BROR NORDBERG

customers always have preferred it to a washed sand, but generally there is an increasing trend toward washed sand and gravel in the New York metropolitan area.

Metropolitan Sand and Gravel Corp. set out to build a plant to meet today's conditions and the future market. Officials of the corporation employed the American Aggregates Corp., Greenville, Ohio, big midwestern producer of sand and gravel, to do the engineering. F. D. Coppock, president of the American Aggregates Corp., was appointed executive vice-president in charge not only of the building of the new plant but also the modernizing of the entire operation. Mr. Coppock, of course, needs no introduction since as head of America's biggest sand and gravel concern, he has designed and built many plants that are outstanding. It will be recalled that he was called upon as a sand and gravel specialist a few years ago in connection with certain determinations to be made of gravel deposits at the Grand Coulee dam project. Mr. Coppock has purchased a considerable amount of the

common stock of the Metropolitan Sand and Gravel Corp.

Always an advocate of the production of many sizes of aggregates, in order to have a number of markets to draw upon, and to eliminate wastage, the American Aggregates Corp., in cooperation with officials of the Metropolitan Sand and Gravel Corp., designed a plant of 800 cu. yd. per hour capacity. It was designed to meet the trends in the marketing area and to have the diversification necessary to keep going for either a buyers' or sellers' market. We might call it a plant built for tomorrow's business, since it can produce many sizes and kinds of materials for which markets will open up when the war is over.

All classes of aggregates used for building in Metropolitan New York, and other seaboard locations are produced. Gravel sizes regularly produced are 1/10 to 3/16-in.; 3/16- to 1/4-in.; 1/4- to 1/2-in.; 1/2- to 3/4-in.; 3/4- to 1 1/4-in.; 1 1/4- to 1 1/2- or 2-in. Sand products consist of 1/10-in. minus dry-screened brick and plaster sand (Cow Bay), 1/10-in. minus washed sand for the same purposes, 1/10-in. minus dried sand for special customers, 1/10-in. minus asphalt sand that contains up to 25 percent



Storage area of 12,000 cu. yd. at the plant. Train of cars is being dumped automatically with specially devised dumping mechanism



General view of plant. To the left is the crushing unit with conveyor inclining up from surge stockpile with another returning to it from crusher. Storage for asphalt sand is to the left of main plant with the one to right for dried brick or plaster sand. For reclaiming into railway cars there is a long tunnel conveyor under the entire plant

minus 80-mesh. Concrete sand is a blend of 1/10-in. minus plaster or brick sand, wet or dry, with a 1/10-x 3/16-in. gravel size. They are mixed on reclaiming belt conveyors under the plant bins and stockpiles. The retention of fines and making more of them in processing asphalt sand is the production problem, since the bank run sand contains only 6 percent minus 80-mesh, and up to 25 percent is needed in some grades. Eighty-five percent of the bank run product is sand.

As a result of all of the changes and improvements which have been made at the Port Washington plant, the cost of production has not only been materially reduced but more products and better products can be made. The total advantage of the changes made will not be fully realized until a return of normal business in the New York area.

Old Plant

Field operations of the old plant were steam-powered. The field equipment as well as the processing plant had seen 25 years service. A number of bank cavers, also three or four steam shovels, were needed to load into 15-cu. yd. capacity cars which were hauled by narrow gauge steam locomotives to the processing plant. All fine sand sizing was made over gravity screens.

There were no storage bins of any size. Locomotives hauled cars of graded material over a number of branch railroad lines out over a trestle where the cars were dumped directly into waiting barges. The only substantial storage was in these barges. Neither was there any provision for blending sizes.

T. R. Freyhof, one of the American Aggregates Corporation's experienced operating men, was sent to

Port Washington to supervise construction of the new plant and to put it into production.

All the steam equipment, including shovels and locomotives, was scrapped. A long-boomed, all-electric dragline took the place of all the smaller shovels in the field operation, and a Diesel powered locomotive was built to haul bank run to the plant in 40-cu. yd. capacity standard gauge ore cars. A raw storage reserve of 12,000 cu. yd. dumped from a steel trestle onto a reclaiming tunnel was provided for to guarantee a steady flow of material into the plant regardless of field delays. Crushing equipment was installed to handle oversize gravel and an extensive screening plant was built, with vibrating sizing screens. Yet, the plant was equipped to continue making "Cow Bay" sand, and with drying equipment to produce dried plaster and brick sand for customers who prefer it that way. Auxiliary fine reduction crushers to make more fines for the production of asphalt sand were put in, and an elaborate sand classification system. Provisions for blending from bins and stockpiles give a high degree of flexi-

bility to the plant. The plant is built of steel, with reinforced concrete bins, and presents a striking picture.

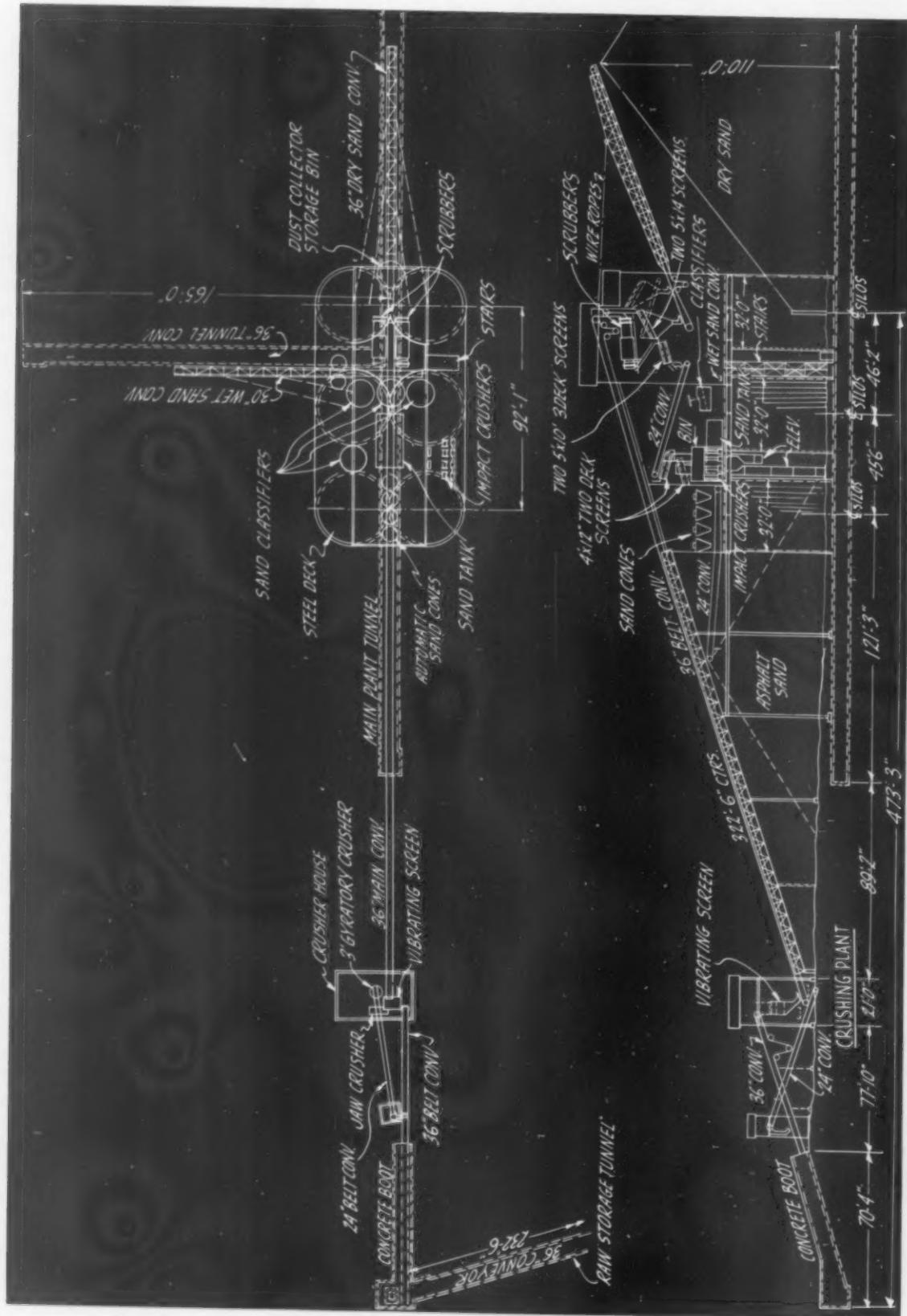
One of the most unusual things about the plant is the tremendous storage facilities for finished products. When all the bins and stockpiles are full, an estimated 100,000 tons of finished products are available for immediate loading. All of which is reclaimable by belt conveyors for shipment; the 12,000-cu. yd. raw storage permits the plant to operate somewhat independently of the field operation. The large storage of finished products makes it possible to meet the daily trade demands regardless of plant capacity, plant failures and daily production. Besides, the large storages permit a continuous operation of the plant regardless of current trade demands.

Present pit workings are a mile from the plant, in a location of bank where the top 40 ft. of material had already been worked out over a part of the 500-acre deposit. No stripping will be needed for some time. About 85 percent of the bank run in the lower level is sand and very little of the gravel runs over 2-in. size. Gen-



Truck-loading bin for local trade on extreme left. Conveyor in foreground to fill bin is fed from belt conveyor under the plant and stockpiles

SAND AND GRAVEL



Elevation and plan of new Port Washington, L. I., plant of Metropolitan Sand & Gravel Corporation shows how a large storage capacity is provided

SAND AND GRAVEL

erally, 1½-in. top size is the maximum size produced unless the government or other special orders calls for 2-in. gravel for some particular construction.

In place of the scrapped five 4-yd. Railroad Type steam shovels there is now one 7-cu. yd. all-electric 175-B Bucyrus-Erie dragline operating on sectional track. The machine has a long boom, 110 ft., to eliminate the bank-caving hazard which was always a problem when smaller shovels were employed. The dragline cuts a width of 200 ft. each time through the deposit. The haul to the plant is over standard gauge track. A 160-cu. yd. capacity steel hopper straddles the rails near the dragline, holding almost enough material to fill four bottom-dump ore cars which make up a train. The cars can be loaded at the rate of one per minute. The ore cars, which came from the Minnesota iron range, have been rebuilt and fitted with 15-in. higher sides, also with electric dumping and closing devices.

Excavation is carried on to a definite row pattern and the dragline is

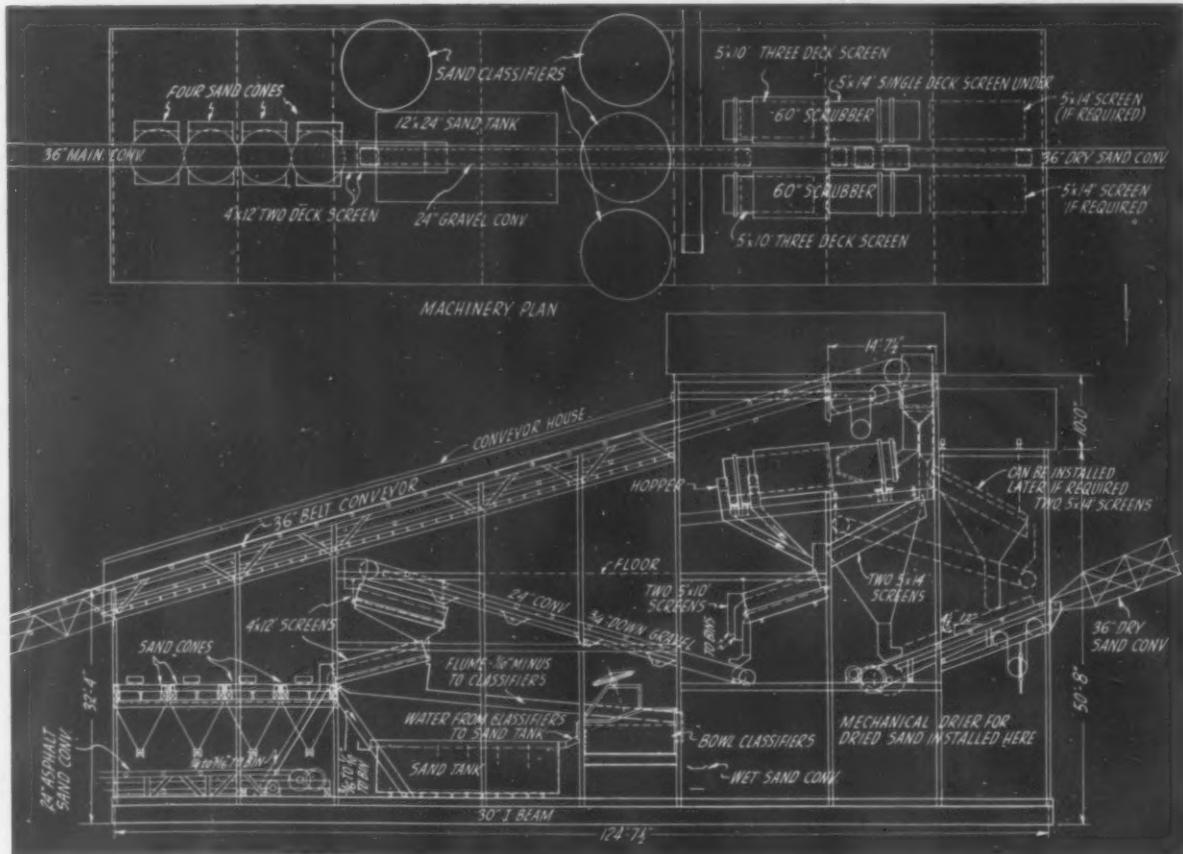


Electric dragline of 7-cu. yd. capacity loading 160-cu. yd. carloading bin which is portable

working on a level even with the top of the hopper, which makes it easy to cave and work a 90-ft. face. The hopper is about 30-ft. high.

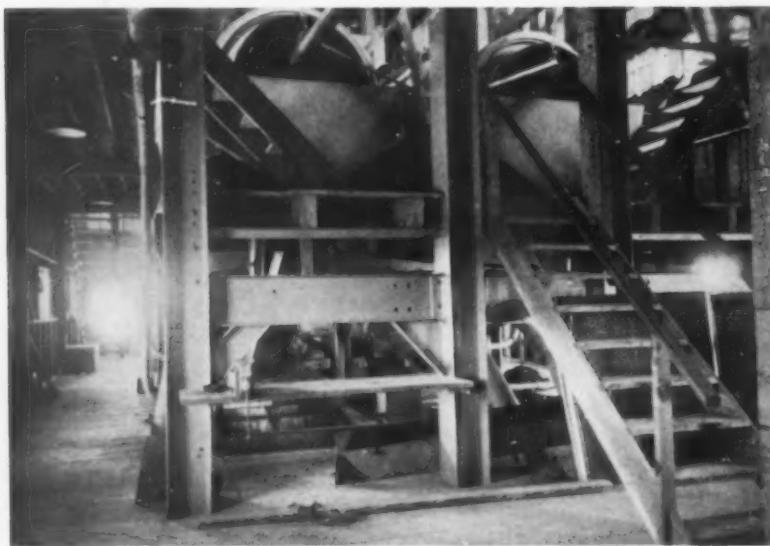
It is a simple operation to re-locate the field hopper. One of the ore cars has four hand-operated ratchet hydraulic screw jacks, one mounted

on each top corner, which are turned up to bear against 12- x 12-in. timbers under the hopper. The hopper is resting on four steel mats attached to each of the four columns. When raised, it is moved by the train to a new location, probably a distance of 40 ft., in about 20 minutes.



Superstructure details of main plant, showing location of screens and washing equipment

SAND AND GRAVEL



Two 5- x 23-ft. scrubbers, above, for processing to remove deleterious materials and to make fines

The locomotive is a built-over interurban freight car, powered by two 250-hp. Cummins Diesel engines. The engines are direct-connected to a d.c. generator which operates four 100-hp. motors mounted on the four axles of the car. Both engines are needed to negotiate a 1½ percent grade loaded. Fuel consumption is 54 gal. in 8 hours. Maximum speed of train under load is about 15 mi. per hour.

Live storage capacity for 12,000 tons was provided near the plant under a 300-ft. steel trestle, reclaimable to the processing plant by tunnel belt conveyors. Incidentally, most of the American Aggregates Corp. plants are laid out on the scheme of large storage capacities over reclaiming tunnel conveyors. The center line of the trestle is at right angles to the main conveyor feeding the plant and the track on the trestle is 30 ft. above the tunnel. Beams supporting the rails are of fabricated $\frac{3}{8}$ -in. structural steel plate, one for each rail, 51 in. high (with steel bents every 50 ft.). The steel came from dismantled elevated transit lines in New York City that have been recently replaced by a subway system. Large holes were cut out of the webs of the beams, through which the sand and gravel flow out to the sides and thereby increase the tonnage that can be stored in stockpiles. There is no possibility of material building up between the rails and causing derailments.

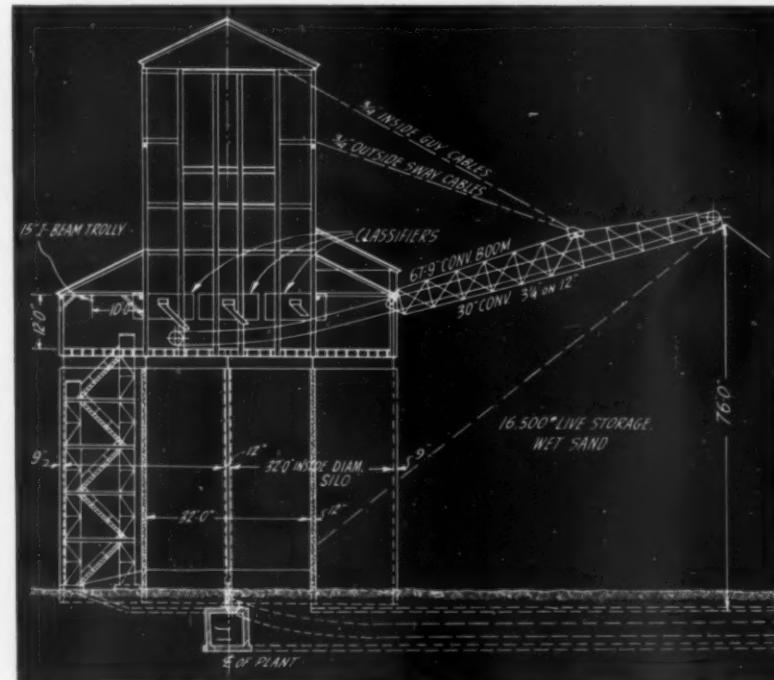
When the plant reaches continuous maximum production, which will probably be after the war, its output

of 800 cu. yd. per hour will require working the dragline two 8-hr. shifts. That's the reason for 12,000 cu. yd. reserve storage. With a present production rate somewhat less than that figure, the storage of raw material serves to help keep up the daily production rate. Four cars hauling from the excavation will handle the output of the dragline (500 cu. yd. per hr.) but the plant can produce more.

A quick method for dumping cars was devised. Each bottom-dump hopper car has a motor-operated gate with the motor drive operated from d.c. current generated in the locomotive. While the train slowly pulls out over the trestle, an attendant walks alongside to start each dumping motor by electric push button. When the motor starts, a chain connected to the gate and motor sprockets is released and the gates open. The attendant then presses another button and the gates close. There is an automatic cut-off on the motor when the gate reaches its full opening. The 4-car train can be dumped in approximately two minutes.

Material under the first 50 ft. of the trestle length is fed directly onto a 36-in. tunnel belt conveyor, 140-ft. centers, by a Jeffrey-Traylor vibrating feeder, to keep material moving through the plant, while the deposit is under excavation. This conveyor inclines upward to a scalping screen and crusher unit. A second 36-in. belt conveyor under the other 250 ft. of storage piles, cross-wise to the main plant conveyor, is used only when material directly over the feeder has been used up. Both belts run at 500 f.p.m.

A few conveyor idlers and a little other machinery were salvaged from the old plant, not to exceed 10 percent of the total equipment. All new



Section view of main plant showing wet sand arrangement of Port Washington, L. I., plant

SAND AND GRAVEL

conveyor idlers are Rex Stearns ball-bearing idlers, lubricated from one side, and Republic and Goodyear conveyor belting, 5-ply and 6-ply, are used throughout.

A very small percentage of the total material is big enough to be crushed. The primary belt discharges over a 5- x 10-ft. double-deck Tyler Ty-Rock vibrating scalping screen which carries 2-in. sq. openings on top and 1½-in. below. As a rule the top size gravel produced in the plant is 1½-in. Then, everything plus 1½-in. is crushed through a 3-ft. Traylor gyratory crusher. Otherwise only plus 2-in. is crushed. Crushed material returns to the main belt conveyor over a 24-in. conveyor, to complete a circuit. A 15- x 30-in. Farrel Bacon jaw crusher is being set up alongside the gyratory as a standby.

Everything passing through the scalping screen is carried into the main plant over a 36-in. belt conveyor on 322-ft. centers. This conveyor has a speed of 500 f.p.m. and



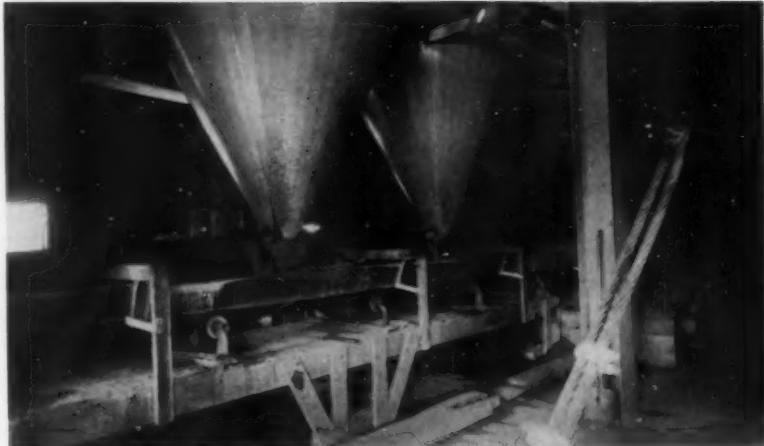
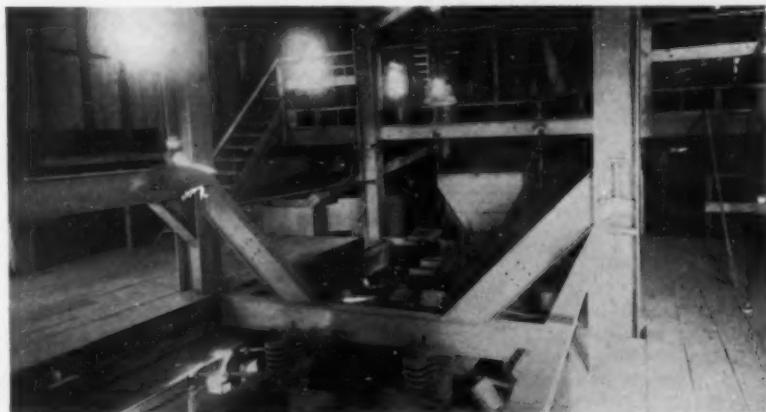
Left to right: R. E. Allen, chief engineer and purchasing agent; T. R. Freyhol, manager of operations, and B. J. Thompson, superintendent

a slope of 4 in. At the head of the conveyor, a butterfly gate inside a

chute is the means of regulating how much material is to be scrubbed. There are two 60-in. Greenville Manufacturing Co. revolving scrubbers installed side by side. Each is 23 ft. long overall and has a scrubber section 8 ft. long. The inner barrels on the screen end have $\frac{3}{8}$ - x $\frac{3}{4}$ -in. wire and the outer barrels are of 1/10- x $\frac{3}{4}$ -in. 10-gauge wire. Inside the scrubber ends are about 250 steel balls for dissolving clay and soft particles. The scrubbers turn at 18 r.p.m.

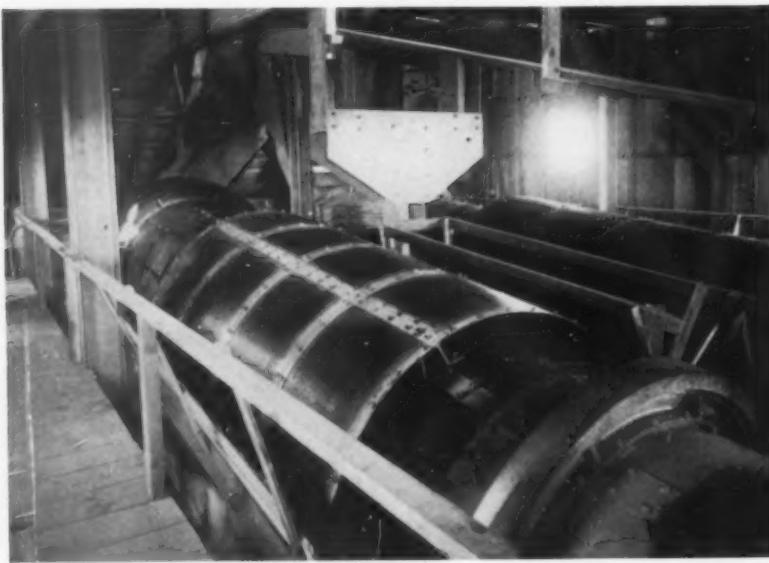
Scrubbing is necessary for two reasons. Occasionally, some mud balls occur in the deposit, usually near the top of the bank where they are left over from the overburden, and there are occasional chunks of hard pan. These deleterious materials are broken down by scrubbing and washing. When the materials are running clean from the deposit, from 15 to 20 percent of the total is put through the scrubbers as a rule, to grind additional fines that are needed in asphalt sand.

The balance of the plant load is split over two 5- x 14-ft. Allis-Chalmers Ripl-Flo single-deck vibrating screens that grade the dry sand. These screens are pitched 40 deg. to the horizontal and carry $\frac{1}{8}$ - x 4-in. slotted openings of .063-in. gauge wire. Minus $\frac{1}{8}$ -in. sand drops into a collecting hopper, from which the sand is fed onto a 36-in. stacking belt conveyor, 140-ft. centers, for stockpiling over the main reclaiming tunnel conveyor. The maximum carried in the stockpile, when filled to a height of 110 ft., is 180,000 tons of dry-screened brick or plaster sand.



Above: Showing upper ends of four automatic settling cones with screens in the background. Below: Four settling cones to make asphalt sand discharge on to belt conveyor which also carries sands from other sources, blending enroute to the stockpile

SAND AND GRAVEL



Two trommel screens with sand jackets, showing main plant conveyor overhead. These screens scrub out clay balls and make more fines for asphalt sand

60,000 tons of which is live storage which will draw onto the loading belts.

The sand screens have a steep incline because some carryover is wanted for wet sand production and in order to keep the load on the screens light so that they will vibrate clean. Everything retained on them ($\frac{1}{8}$ - to $1\frac{1}{4}$ -in. plus sand runover) is put over two 5- x 10-ft. three-deck Ty-Rock vibrating screens for wet screening. The top decks carry $1\frac{1}{4}$ -in., followed by $\frac{3}{4}$ -in. and $\frac{1}{8}$ -in. openings on the middle and bottom decks. A $\frac{3}{4}$ - to $1\frac{1}{4}$ -in. product is dropped into 1200-ton reinforced concrete bins and also $1\frac{1}{4}$ - to 2-in. gravel when that size is being produced.

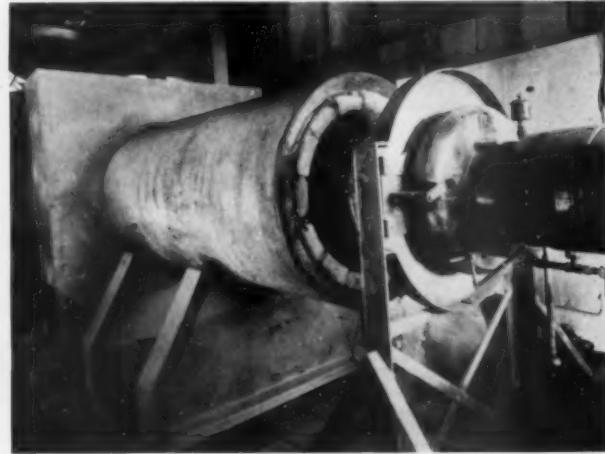
The $1/10$ - to $3/4$ -in. gravel retained on the lower decks is screened again farther along and minus $\frac{1}{8}$ -in. material passes through flumes into two 12-ft. diameter Dorr bowl classifiers, which function mainly as dewatering machines. Concentrates from both are stockpiled by a 36-in. cross belt stacked on 120-ft. centers over a tunnel conveyor. Capacity of live storage for wet plaster or brick sand is 16,500 tons.

Fine sand from one of the overhead scrubbers is dewatered in a third Dorr bowl classifier. The concentrates discharge onto the same cross stacking conveyor so that the sand from both sources is blended on the common conveyor. All three classifiers are arranged in a row

paralleling the conveyor. Sand from the second scrubber is laundered into a fourth Dorr bowl classifier and is dewatered to make up part of the asphalt sand. Concentrates are conveyed on a 24-in. belt conveyor which places asphalt sand into a separate stockpile. This conveyor also carries other fractions that go into making asphalt sand.

Overflows from all four bowl classifiers are laundered into a single large settling tank, 12- x 24-ft., and 7-ft. deep. Settlings in the tank are pumped into a launder by six 2-in. Nagel cast iron pumps, through which they flow into four Greenville Automatic settling cones in sequence. These cones are in a single row to discharge directly on the asphalt sand belt conveyor which also carries the Dorr concentrates mentioned above. The two products are blended on the belt as they are conveyed for stockpiling. Capacity for this product, in live storage, is 8000 tons. Overflows from the four settling cones are returned by gravity into the central settling tank and the overflow from this tank is laundered to waste. Expansion of the asphalt sand production is under consideration as well as certain changes in the production methods.

Returning to the two 5- x 10-ft. triple-deck screens which screen the runover from the dry screens, a 24-in. belt conveyor carries the $1/10$ - x $3/4$ -in. product retained on the lower deck to a 4- x 12-ft. double-deck Ty-Rock vibrating screen, for further sizing. Two washed gravel sizes are taken off this screen, $\frac{1}{2}$ - to $3/4$ -in. and $1/4$ - to $1/2$ -in., directly into separate 1200-ton bins. Minus $1/4$ -in. is carried forward over another belt conveyor to a similar vibrating screen



Left: Feed end of rotary drier for drying brick or plaster sand. Right: Firing end of drier

SAND AND GRAVEL

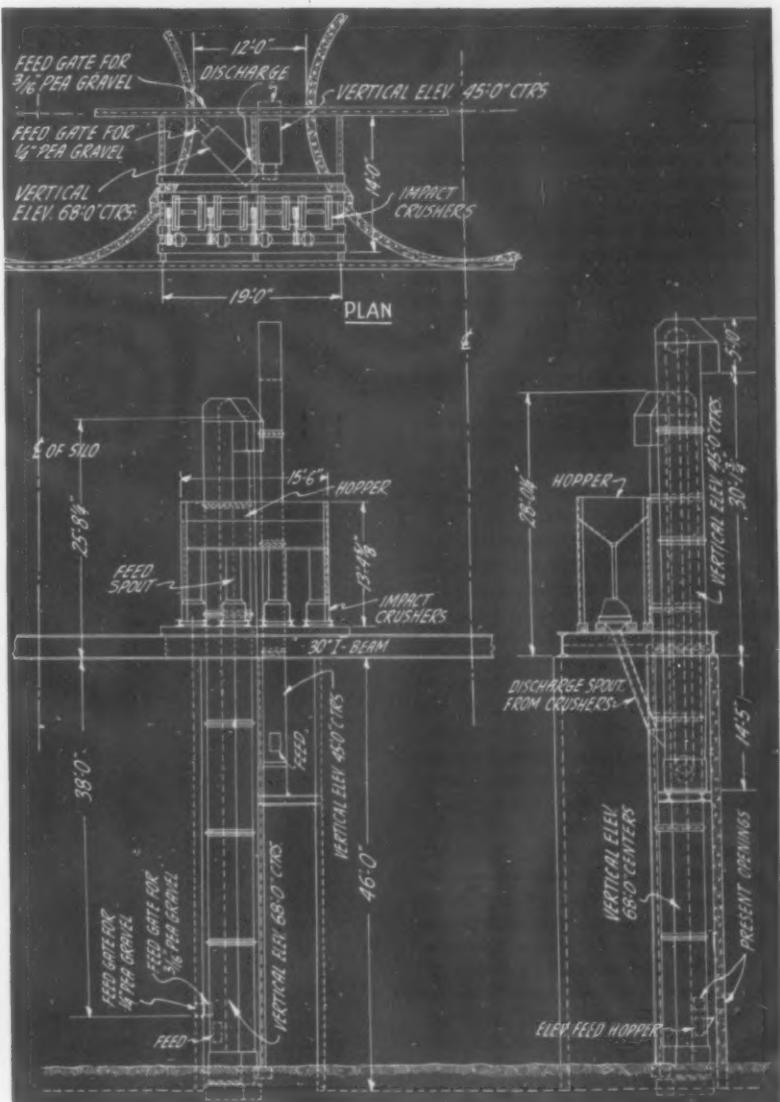


Dock-loading belt conveyor for loading out barges for shipments to the New York market

where the pea gravel (3/16- x 1/4-in.) is screened out and stored, and a 1/10- x 3/16-in. product (grits) which is stored and later blended with finer sands on reclaiming belt conveyors to make concrete sand. Minus 1/10-in. sand through the screen is processed through the Dorr classifiers in the same way as the other sands were treated.

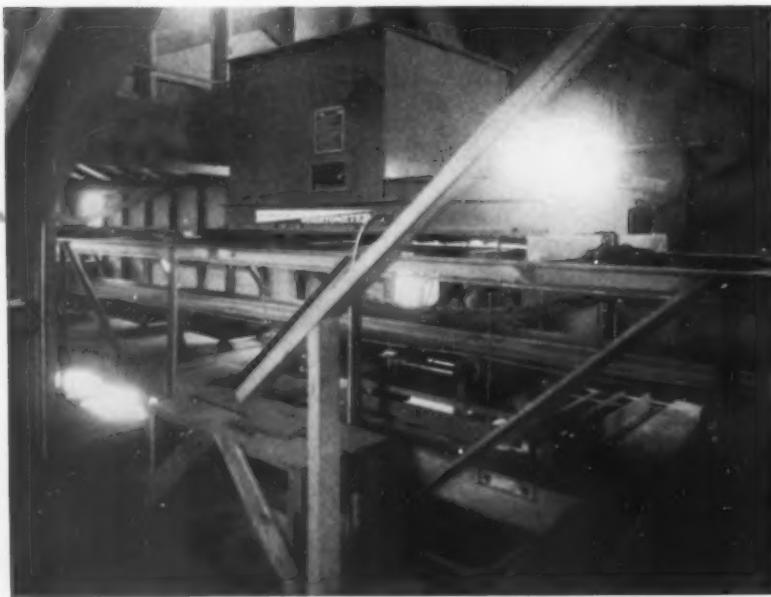
There are six reinforced concrete bins, each 40-ft. in diameter, 45-ft. high, supporting the main plant structure and two center bins, each with a capacity of 1200 live tons. Some of the pea gravel in one of the center bins is crushed down in order to build up the fines in the asphalt sand. It is withdrawn through a side gate on the bin into a 12-in. Jeffrey bucket elevator, 65-ft. centers, which fills a distributing hopper over four 22-in. Greenville impact crushers.

After passage through these crushers, the product is elevated to a 2- x 7-ft. single-deck screen where a separation is made at 16-mesh. A heavy water spray is played over the screen to help make the separation. Minus 16-mesh is laundered into the same Dorr classifier which receives its feed from one of the scrubbers and from which concentrates discharge onto the asphalt sand belt. Thus, sand particles from three sources are blended to make asphalt sand. Plus 16-mesh is sent through a flume back to the pea gravel vibrating screen for re-screening and, after sizing, will find its way back into the



Right: Impact crusher settings and pea gravel elevator details with plan to show relation to other equipment

SAND AND GRAVEL



Accurately weigh out sand and gravel loaded into barges by belt conveyor

proper storage bins (pea or grit). A circuit is completed, with the pea gravel bin serving as a storage reserve. Sometimes grit from the second bin is put through the impact crushers, depending upon the relative markets for concrete sand (grits blended with $\frac{1}{8}$ -in. sand) and pea gravel.

Each impact crusher is driven at 18 r.p.m. from a 25-hp. electric motor and produces 15 t.p.h. of product. Feed material contains 96 percent retained on the No. 8 mesh. The product has 60 percent minus 8-mesh, 20 percent minus 50-mesh, 7½ percent through 100-mesh and about 3 percent passing the 200. It will be remembered that the final asphalt sand products must contain up to 25 percent minus 80-mesh fines. In operating the impact crushers, the plates are allowed to wear for 24 hr. before they are turned, and after 16 to 24 additional hours of service they are replaced.

From the description of the normal flowsheet, it can be seen that use is being made of all surpluses in order to utilize all the fines and oversize and to balance the production with the markets. By the use of many size separations, and tunnel belt conveyors to blend materials when withdrawn from stockpiles and bins, and the blending of different sands to produce concrete sand, segregation is minimized. By blending different sizes, after their production, adjustments in gradation are simple to make. Asphalt sand is always pro-

duced to 25 percent minus 80-mesh; a coarser grade with 10 percent through 80-mesh is produced by blending.

One other product, dried brick or plaster sand, is regularly made and stockpiled for special customers. Underneath the hopper which receives dried brick or plaster sand from the dry screens and from which the stockpiling stacker conveyor receives its feed, there is an outlet and a Jeffrey screw conveyor to draw off a regulated amount of sand for di-

rect feed into a 60-in. x 24-ft. Heathington and Berner rotary drier. The drier is fired by a Ray oil burner and the product is discharged into one of the 1200-ton concrete bins. Dust drawn from the drier is caught in a dust collector and stored in an auxiliary bin. It is blended into the asphalt sand on the reclaiming tunnel belt conveyor to further build up the fines. The installation of the sand dryer as a part of gravel plant equipment is a new innovation and is proving to be a very economic method.

In preference to using salt water for washing, as many producers do, an inland lake was excavated for a supply of fresh water. Two 6-in. Allis-Chalmers pumps deliver the water into the plant at the rate of 1400 g.p.m. each, in pumping against a 140-ft. head. Total connected electrical horsepower in the plant is 1486. All the equipment drives are either Gates V-belt or gear reducers.

The main plant structure is of heavy I-beam construction, with 30-in. beams supported on the reinforced concrete silos to carry the structure above, which is of 12-in. I-beam sections. The weight of the stackers was taken care of by running wire rope guys from the top main bent of each stacker to the 30-in. main floor beams.

Loading Material

Most of the product of the plant is shipped by water into New York City and other ports, and reclaiming belt

(Continued on page 89)



One of two single-deck Rippl-flo screens on 40-deg. angle for screening dry sand

CONSTRUCTION

War and Post War Construction

Abstract of Address by Thomas S. Holden, President, F. W. Dodge Corporation, at War Industry Conference, National Sand and Gravel Association

WE KNOW that the peak of war production has passed and that the total volume this year of building and construction is apt to be about half that of the record year 1942, which leaves a volume greater than the average peace-time year in total dollars—a sizable volume of business for most people. It is a little hard to say what we might expect after 1943 until the end of the war, unless indeed the war should end this year, which would be a rather optimistic hope.

War-time construction from this time will be dominated strictly by war needs, in considerable part unforeseeable; post-war construction will be dominated by economic demand, some of which already exists.

An estimate, up to November 22, 1942, by the F. W. Dodge Corporation, for the 37 Eastern States, showed approximately 2 billion dollars of projected and deferred construction. About one-third was private and two-thirds public construction. It is hoped that inflation controls will be so effective that a deflationary period like the one in 1920-21, which followed the last war, can be avoided. Hence private building may be expected to get under way soon after the end of this war.

Huge Credit Reserve

It is conservatively estimated that war savings bonds in the hands of individuals will amount to 24 billion dollars by the end of 1943; also that potential consumer credit will amount to at least another 8 billion dollars. Bank deposits and savings in other forms will swell the total. States and local governments are also accumulating credit. Many of them will be able to finance presently deferred projects. There is thus a very considerable question whether large Federal spending programs will be necessary, other than for special emergency situations.

No Later Slump, Either

It is not anticipated that demand for construction will slump when the

industry catches up with this deferred demand, because it is expected the flagrant speculative excess of the 1920's will not be repeated—in other words our expansion of facilities will be better planned and controlled.

Some rise in the general price level is unavoidable. The best we can expect of inflation controls is that they will cause the rise to come about in an orderly way instead of skyrocketing and then tumbling back, causing great economic and social distress, as happened after the last war.

That means, if it comes about, a slow lagging rise in real estate values, an improved tax position of local governments, which depend largely upon real estate, and generally will assist in the recovery movement, if it can be kept under orderly controls.

War Permanently Raises Income

A war, which does not deplete our resources and manpower too seriously, raises our national income to a higher level and usually maintains it on that level. The prospect of a national income at 50 to 75 percent higher than the average for the 1930-39 decade is definitely in prospect.

Analysis and discussion of post-war potentialities by economists and industrial leaders seem to be crystallizing into the view that our principal concern for a number of years following the war is likely to be controlling a boom—a rather decided change from the view, still held by many, that a severe post-war depression is inevitable.

It does not seem likely that this country will soon again have to make, all at one time, such a large number of major adjustments in our domestic economy as we have had in the 1930's; nor does it appear inevitable that we must repeat the mistakes of the 1920's. It would be foolhardy to predict that business will not have ups and downs, but it does seem that our broader knowledge of current business trends, our increased consciousness of the impacts of particular business proce-

dures upon the general economy, and our experience in dealing with the emergencies created by the depression, should enable us hereafter to do a better job than we have done before in holding on to our prosperity when we get it.

Size of Post-War Market

It seems reasonable to assume, at least for the purpose of making post-war marketing plans, that the total annual construction expenditures in the post-war decade will average at least double the average for the poverty decade of the 1930's. Such an average might not be reached during the first year or so of recovery, since conversion difficulties may cause the recovery start to be a little slow. If this indicated volume is attained, it would be reasonable to expect non-residential building to average about 1 1/4 times the 1930-39 average; residential building to increase three-fold, and heavy engineering construction to increase something like 50 percent.

Romancers who are predicting all manner of revolutionary changes in construction design and construction techniques overlook the fact that adaptability to change and quick adoption of new materials and new methods is a chief item of the construction industry's stock in trade.

Conclusions

It seems that a careful and realistic appraisal of our situation and the factors that we can observe at the present time in terms of accumulating purchasing power and accumulating needs are bound to lead us to the conclusion that the opportunity will be here for a finer prosperity and probably a larger volume of construction than we ever had before in our history, if we are just smart enough to manage the many problems that we will have.

[EDITOR'S NOTE: Reports of the National Sand and Gravel Association and the National Ready Mixed Concrete Association immediately follow the abstract of Mr. Holden's address at the first joint meeting.]

ASSOCIATIONS



Pres. Otto Conrades, N. S. & G. Assn.

AN ATTENDANCE of 550 members and guests was eloquent testimony to the value of the war conference programs of the National Sand and Gravel Association and the National Ready Mixed Concrete Associations held at the Statler Hotel, Cleveland, Ohio, January 26 to 29, inclusive. Members came from every corner of the United States and Canada. Another evidence of the serious character of the convention programs was the very excellent attendance at the meetings. There were no exhibits this year in compliance with the government request to eliminate unnecessary freight movements.

PAUL BIRD of Boston, Mass., introduced the presidents of the National Sand and Gravel Association and the National Ready Mixed Concrete Association at the joint opening session on Wednesday, January 27.

PRESIDENT GARVIN PELSUE, Los Angeles, Calif., of the National Ready Mixed Concrete Association gave a short address of welcome and urged the members to attend the important sessions at which government officials would be available to tell about new regulations and to answer questions about their immediate problems. He said that the ready-mixed concrete industry should take steps in preparation for the future. Mr. Pelsue reported that the industry had had a very satisfactory business during the past year.

PRESIDENT OTTO CONRADES of the National Sand and Gravel Associa-

1943 War Conference

Industry prospects in 1943 and post-war business, government regulations, labor, and taxation problems center the attention of the National Sand and Gravel Association and National Ready Mixed Concrete meetings

tion, in his address, said that the purposes of the War Industry Conference are "to take stock of how our industry has performed in the war effort so far, what we can do further to assist in winning the war, and what our part shall be in the program of reconstruction that must follow."

Pointing to the production figures of the Bureau of Mines as one measure of the industry's contribution to the war effort, he said that in 1939 the production as a whole was 226,000,000 tons which steadily rose until estimates for 1942 indicate a figure approaching 350,000,000 tons of sand and gravel. As to the future, he said that although production in 1943 will probably be off one-third or more, it is generally believed that it will not go below the average of recent peace-time years. However, the post-war picture is particularly bright as Federal highway plans call for an expenditure of \$500,000,000 and there should be a big backlog of road construction by States and Counties.

President Conrades expressed his appreciation for the cooperation extended first by Dr. Nelson and Mr. Bauman and now by Mr. Knoizen of the W.P.B. and other government officials. He also thanked the Association staff for their untiring efforts. In closing, President Conrades recorded the passing of several staunch association members: Bill Fischer of Memphis, Harry Stewart, Edgar L. Wade, W. Jess Brown, Frank Welch, and Harry W. Vickery.

Officers Reelected

The following officers and directors were reelected by the National Sand and Gravel Association for 1943: President, Otto S. Conrades, president of the St. Louis Material and Supply Co., St. Louis, Mo.; vice-president, H. S. Davison, Pittsburgh, Penn.; and secretary-treasurer, Harris N. Snyder, Buffalo, N. Y.; executive committee, T. E. Popplewell, Fort

Worth, Texas; Robert Mitchell, Los Angeles, Calif.; George W. Renwick, Chicago, Ill.; and John M. Settle, Louisville, Ky.

Officers reelected by the National Ready Mixed Concrete Association are: President, H. F. Garvin Pelsue, vice-president, Graham Bros., Inc., Los Angeles, Calif.; vice-presidents, Stephen Stepanian, Columbus, Ohio; Alexander Foster, Jr., Philadelphia, Penn.; and C. W. Shirey, Waterloo, Iowa; D. D. Reynolds, Boston, Mass., secretary; and Alexander Johnson, Brooklyn, N. Y.

Manufacturers Division

At a meeting of the Manufacturers Division, National Sand and Gravel Association the following officials were elected for 1943: Chairman, Perry Nagle, American Manganese Steel Division, American Brake Shoe & Foundry Co., Chicago Heights, Ill.; vice-chairmen, Theo. Aulmann, Eagle Iron Works, Des Moines, Iowa; E. J. Goes, Koehring Co., Milwaukee, Wis.; Abe Goldberg, Allis-Chalmers Mfg. Co., Milwaukee, Wis.; L. W. Shugg, General Electric Co., Schenectady, N. Y.; Frank B. Ungar, The Ludlow-Saylor Wire Co., St. Louis, Mo.; and Frank Wyse, Bucyrus-Erie Co., Milwaukee, Wis.

IRWIN F. DEISTER, Deister Machine Co., Fort Wayne, Ind., who did such a commendable job in 1942 as chairman, joined the ranks of past chairmen who are as follows: H. M. Davison, The H. M. Davison Co., Newark, N. J.; M. B. Garber, The Thew Shovel Co.; Lorain, Ohio, now on leave to serve with W.P.B.; D. D. Guilfoil, Sauerman Bros., Inc., Chicago, Ill.; C. S. Huntington, Link-Belt Co., Chicago, Ill.; Bradley S. Carr, American Manganese Steel Division, American Brake Shoe & Foundry Co., Chicago Heights, Ill.; J. Fennell Berger, John A. Roebling's Sons Co., Trenton, N. J.; Bruce G. Shotton, Hendrick Manufacturing Co., Pittsburgh, Penn., and A. A. Levison, Blaw-Knox Co., Pittsburgh, Penn.

Industry Prospects in 1943

EXECUTIVE SECRETARY V. P. AHEARN of the National Sand and Gravel Association and the National Ready Mixed Concrete Association presented an interesting analysis of business prospects for 1943 and a review of 1942 volume gathered from a nationwide survey.

In New England, 1942 volume compared with 1941 showed an increase of 25 percent, but anticipated decline in 1943 is approximately 40 to 50 percent.

New York State metropolitan centers showed gains in 1942 of 25 percent compared with 1941, except New York City where demands reached new low levels. Demand in 1943 is expected to be about 50 percent of 1942.

In Pennsylvania sand and gravel and ready mixed concrete industries duplicated 1941 demand. In rural areas, where highways offered the important market, declines were nearly 50 percent. Ready mixed concrete demand continued about on a level with 1941 in metropolitan areas. For 1943, declines of 25 percent are expected in rural areas, and 50 percent in metropolitan areas.

A very active market for ready mixed concrete and sand and gravel developed in 1942 in West Virginia, Ohio, Indiana, Illinois and Michigan, increases ranging from 25 to 75 percent, depending upon the locality. Access highways, railroad ballast, and Defense Plant Corporation construction constituted the principal sources of volume. 1943 volume is expected to

decline substantially, but housing for war workers and railroad ballast will offer a considerable market.

Kentucky and Tennessee sand and gravel and ready mixed concrete business in 1942 was nearly up to 1941 with demand coming from direct and indirect military requirements. Outlook for 1943 is about 50 percent of 1942. Military camps, hospitals and housing will comprise this demand.

Louisiana and Texas activity for both industries reached new heights in 1942. While there will be some declines in 1943, demand will continue at high levels in certain localities.

Demand in Missouri and Kansas, with the exception of the St. Louis area, was strong in metropolitan centers. Ready mixed concrete volume held up well in St. Louis. Minnesota and Iowa had a similar experience in 1942. Volume is expected to decline about 50 percent in 1943.

Nebraska showed a tremendous increase in 1943 for both industries, largely military construction. In Colorado, the sand and gravel industry showed increased activity in 1942, but ready mixed concrete had even a better showing. Demand will be off in 1943, but incomplete war construction is expected to offer a substantial volume.

Eastern Washington sand and gravel producers had a tremendous increase in volume, and ready mixed concrete showed even greater gains. There will be a considerable volume of business in 1943, but the second half is expected to show a substantial decline. Direct and indirect military construction constituted the major volume, followed by defense housing.

California business for both industries closely paralleled the results in Colorado and Eastern Washington. Although volume in the Los Angeles area was actually less in 1942 than 1941, northern California had a heavy volume of business.

Summarizing, Mr. Ahearn said that the industry had the phenomenal experience of a sand and gravel demand in certain localities which taxed production capacity even when it was operated at multiple shifts. In Texas sand and gravel moved over 500 miles, and it was necessary to allocate aggregates among military projects in western Missouri and eastern Kansas. For ready mixed concrete, there was a scarcity of cement in certain sections. W.P.B.



Exec. Secy. V. P. Ahearn

has ordered stoppage of construction on projects totaling \$1,214,850,897 in 1943, but it was pointed out many of these projects will be released as soon as the emergency necessitating curtailment of materials has passed. Mr. Ahearn pointed to the serious manpower problem for both industries with other war industries competing for labor. He referred to the harmonious relations of the industry with the Mining Equipment Division of W.P.B., but said that the ready mixed concrete industry had experienced more difficulty in getting repair parts. Bearing in mind the uncertainties involved in making a survey of industry prospects, Mr. Ahearn said that the industries as a whole would show a decline in 1943 of about 50 percent, but 1942 was a record-breaking year. However, the after-the-war prospects look exceptionally bright for the industry with much private and public construction now deferred that will be released with the ending of the war.

Annual Dinner and Reception

SOME very excellent entertainment was provided at the annual dinner of the National Sand and Gravel Association and National Ready Mixed Concrete Association on Thursday night, January 28. There were no speakers.

The reception by the Manufacturers' Division in the Pine Room was a very pleasant occasion, affording an opportunity of producers and manufacturer members to get together.



Perry Nagle, new chairman, Manufacturers' Division

PRIORITIES



Arthur S. Knoizen

PRESIDENT CONRADES introduced Arthur Knoizen, the new director of the Mining Equipment Division, Minerals Bureau, W.P.B., at the afternoon joint session, Wednesday, January 27. The division has a new name but the functions are the same.

MR. KNOIZEN told about the new Controlled Materials Plan under which the industry will be assigned quotas of materials based on information obtained on the form PD-400-C filed by the producers. P-56 or mine serial number control will be retained under this plan at least for the initial phases of the program. Mr. Knoizen assured the industry that it would obtain all essential repair parts if the operations are directly concerned with the war effort. Requests for materials, however, are to be governed by the production estimate of 1943. He pointed out that form PD 400-C would be the only one which the industry would be required to fill out, but it would still be necessary to make applications for each piece of new equipment on PD 731. W.P.B. realizes, he said, that producers in areas involving heavy airport construction, for example, may require new equipment and such requests would be considered sympathetically.

EDWARD W. BAUMAN, technical advisor, non-metallics section, Mining Equipment Division, was then introduced by Mr. Knoizen to answer any questions from the floor. In answer to a question from Mr. Ahearn as to whether it would be advantageous to have a quota assigned for all plant operations in one state, Mr. Bauman said that it would be of value to

Obtaining Repair Parts and New Equipment

group them. Answering Mr. Noonan of Buffalo, N. Y., as to quota limitation covering dollar or weight in the quarterly period, he said that this would have some control over rating, but the intention is to compel deductions only for value of products received. It is best to assign a quota for anticipated orders as well as receipts. JOHN PRINCE asked about situation when the fourth quarter orders could not be delivered. These

Equipment Bureau, W.P.B. described the procedure for the purchase of new equipment under Order L-192 which controls 125 items of equipment. Tractors, cranes and shovels, he said, are extremely difficult to get as they are considered combat equipment. He outlined the five limitation orders under L-192; namely, L-53, tractor and track-laying equipment; L-53-B, repairs; L-196, used equipment; L-217, conservation order. The industry, he said, should continue to use P-56 for repairs under L-192. PD 566 form is to be used to buy equipment under schedule A, but there are practically no restrictions on schedule B, off-the-shelf materials, but schedule C materials cannot be purchased unless the military sponsors their purchase. L-196 was designed to provide an inventory of used equipment and to save building of new equipment. L-217 had for its purpose the saving of alloy steels in certain equipment by substituting less critical metals. Mr. Bauman suggested that PD 566 and PD 731 be used together to shorten the procedure in obtaining new equipment.

Outlook for Sand and Gravel and Ready Mixed Concrete in 1943

JOHN L. HAYNES, director, Building Materials Division, W.P.B., showed a



Edward W. Bauman

orders, he said, should be included in the next quota. RAY WARREN, Pittsburgh, also brought up the somewhat parallel situation where PD-1-A repair supplies could not be delivered during quota period. On the question of the differentiation between repairs, operating supplies, and new equipment, Mr. Bauman referred to the published bulletin of W.P.B. on this question, PDL-1465. Repair parts constitute equipment required to restore a machine which has had a breakdown. Welding rod is a repair item, all motors are considered new equipment, transmission belting is a repair item, but conveyor belting is a supply item. New welding rod production, said Mr. Bauman, will permit more latitude in its allocation.

New Equipment

M. B. GARBER, special assistant, Construction Machinery Division,



M. B. Garber

ROCK PRODUCTS

PRIORITIES

chart of estimated 1943 production. The fourth quarter estimate was represented as half of the third quarter in 1942. Tonnage estimates for 1943, based on 115 million barrels of cement, amounted to 200 million tons of sand and gravel for 1943.

The ready mixed concrete producer must apply on MRO form under CMP if he is to obtain any bar, rod, or sheet steel. On the question of obtaining repairs, Executive Secretary V. P. Ahearn said that the industry should continue to use PD-3-A. JOHN PRINCE asked about percentage of 1942 production indicated as an estimate for 1943. Mr. Haynes replied that the \$8,500,000,000 was for all construction in 1943. In reply to a question by B. F. DEVINE, Mr.



John L. Haynes

Haynes said that the cement figures were only for domestic production. Replying to STEPHEN STEPANIAN, he said the sand and gravel production figures did not include railroad ballast or macadam.

Post-War Planning for Highway Construction

H. S. FAIRBANK, chief, division of research, planning and information, Public Roads Administration, F.W.A., presented a picture of what the highway construction program will be in the post-war era. He said that the primary task of the highway, contrary to general belief, is to facilitate transportation over relatively short distances. Traffic studies of our transcontinental highway routes shows that the traffic density is near the metropolitan centers and that along great stretches of these highways, travel is relatively light. Only 5 per cent of the trips are for more than 50 miles and 84 per cent are by

vehicles going less than 20 miles.

Mr. Fairbank said that there would be a lot of road business after the war representing an accumulation of deferred maintenance, widening, and essential new construction. The Defense Highway Act of 1941 has made provision for surveying and planning for a post-war program of nearly \$500,000,000 for roads and bridges.

This program will center activities mainly in improvements near cities where the traffic density demands widened highways and more easy access through circumferential connections between the radiating main routes. More attention also is being given to the construction of so-called "feeder roads" in the rural communities.

Price Ceilings

NEIL STAEBLER, price executive, O.P.A., gave a very interesting picture of business in 1943, in which he pointed out that although we will produce as a nation 30 per cent more goods than the boom year of 1929, civilians with 25 billion dollars in their pockets will be able to secure a smaller percentage of goods which they are accustomed to buy. This situation has brought about the necessity for price control to prevent inflation from getting out of hand. Mr. Staebler said that it is the purpose of O.P.A. to treat every business and every industry as nearly alike as is possible, but there will of necessity be inconveniences.

Construction has much at stake in the matter of inflation, because if prices rise too high they may discourage post-war building but if they emerge at a lower level construction may be encouraged.

Referring specifically to problems as they affect the two industries, Mr. Staebler said that O.P.A. has ruled that the 3 per cent transportation tax shall be treated in the same way as a 3 per cent increase in freight charges. If a seller's practices in regard to freight indicate that he always passes on to the consumer any increase or any decrease in freight, he may pass on the 3 per cent as an increase in price. This practice may be justified if he sells both on an f.o.b. plant basis and on a delivered basis and gives the customer the choice of buying either way. If there is a deduction of the exact freight paid to every delivery point and the resultant f.o.b. plant price is the same to every customer, it is clear that freight absorption is not practiced and the tax may be passed on. If sales are made on a fixed basing point with the addition of freight from the basing point to destination, the tax may be passed on. However, where sales are made on a zone basis and part of the delivery charge is absorbed to some of the purchasers

in the zone, the 3 per cent tax increase may not be passed on. Producers hauling in their own equipment, of course, cannot pass on the tax increase to the customer.

With respect to wage increases affecting price levels, Mr. Staebler said that Supplementary Order 28 outlines the method of seeking relief. Procedural Regulation 1 should be followed to obtain an increase in prices from O.P.A.

MPR 188 provides that any article sold in March, 1942, or finally priced under the G.M.P.R. before August 1, 1942, continues at that established price; the price of any article produced for the first time after August 1, 1942, must be determined in accordance with the first of four pricing methods outlined in MPR 188. For a new operation, the fourth method is to be applied. In the case of any sale to a Government agency, a petition for price determination may be filed and sales may be made on an open-price basis pending final determination of the petition.

JOHN PRINCE of Kansas City asked



Neil Staebler

LEGAL

Federal Wage Control



J. Rutledge Hill

about price procedure on defense contracts. Mr. Staebler said MRP 188 takes care of this. Within 10 days of the letting of the contract, the price must be filed. After 15 more days, the O.P.A. must pass on the prices. Procedure No. 6 covers a situation where price will affect bidding on government projects, but this applies only to direct sales to the government. E. J. GOODPASTOR of San Francisco was told that Procedure No. 6 offers relief on emergency government war contracts. Establishment of prices to classes of customers is determined by location, volume, credit, etc., but the pricing must be uniform in the class. On the question of increased costs of winter operation asked by Edw. HOLE of American Aggregates, Mr. Staebler said a price amendment petition could be made but individual cases would not be considered and the question would be decided on a regional basis.

Dredge Operators Meeting In Cleveland

A CONFERENCE of sand and gravel producers using navigable waters of the United States was held Wednesday night, January 27 at the Statler Hotel, Cleveland. A very good representation of dredge operators was present for an intimate discussion of labor and taxation problems. Some clarification of the 3 percent tax on transportation for hire was brought out at this meeting which will take the form of a bulletin from the association.

LAMBERT H. MILLER, associate counsel, National Association of Manufacturers, was introduced by PAST PRESIDENT J. RUTLEDGE HILL at the closing joint meeting on Friday, January 29. Mr. Miller gave a brief outline of the various orders of President Roosevelt which developed into the wage stabilization program, including "freezing" of wages, under the War Labor Board.

Under the "wage freeze" regulation all wages and salaries under \$5,000 are frozen at the level on September 15, 1942, except those of professional employees who come under another regulation. Since the inauguration of the Presidential order, the "little steel" ruling No. 9250 permits increases based on a 15 percent cost of living increase. Adjustments also are allowable to eliminate gross inequalities in pay for the same classes of employment, and also regional wage changes for same class of employment. The W.L.B. in principle, however, is opposed to general wage increases and approves individual increases. There has been a stiffening attitude by the W.L.B. against wage increases as it now has reached a critical point. There is an inclination to amend the 15 percent increase to a higher level to compensate for a higher cost of living. Some tendency exists to offer relief where labor is shifting to higher paying jobs in strictly war industries. The law prohibits any reduction of wages, but changes in wage levels are permitted where there is a demotion or

changes of duties. There is an apparent discrimination in the working of the law toward white collar workers.

In the discussion, Mr. Miller advised that the bonus is considered an increase in pay unless the plan was effective before the order. In answer to a question by T. E. POPPLEWELL, he said that General Order No. 5 permits increases for promotions. Ed. HOLE said that the best plan under No. 5 for individual cases was to file under Form 1 to be safe. Mr. Ahearn asked about procedure in the



David A. Gaskill

case of general wage increases to meet wage scales of war industries. The case goes to the regional W.L.B., then to the regional panel within W.L.B., and then to Washington. Miss Glasscock of the local regional W.L.B. office clarified several points.

Forum on Taxation Problems

DAVID A. GASKILL of Thompson, Hine and Flory, Cleveland, Ohio, taxation consultant, discussed informally the new federal excess profits tax law. Mr. Gaskill said that the principal change was the increased rate. The rate can be figured on the 1936-1939 base period or the percentage of invested capital. The total tax, he said, could not exceed 80 per cent of the total income. There is a 10 per cent post-war refund payable in bonds not negotiable. Bonds mature after the war. This 10 per cent credit can be used to pay off debt up to 40 per cent of the debt in

(Continued on page 86)



Lambert Miller

Probably No Nucleus Plants



Wm. Edward Hole

THE JANUARY 28 morning session of the National Sand and Gravel Association, with HARRIS N. SNYDER, secretary and treasurer of the Association, presiding, began with a report by V. P. AHEARN, executive secretary, in which he summarized recent government orders and regulations insofar as they affected the industry.

The subjects covered included the recent O.D.T. car-loading order, which modified the extreme one previously in effect; the handling of applications for draft deferment of the industry's employes; the use of the manning table to list and classify key men, etc.; the ceiling price practice of the O.P.A. Mr. Ahearn said the tendency in O.P.A. is toward fixing an over-all ceiling price for the products of each industry. The only sand and gravel industry case yet to come up, the Crow Creek Sand and Gravel Co., Arkansas, got a price of \$1.25 per cu. yd., f.o.b. plant, under the O.P.A. regulations providing for fixing the price for a new plant or a new product.

Mr. Ahearn warned producers to be sure that any wage increases be approved by the Wage and Hour Administration, or there would be no chance to get an increased price for the product because of this increased cost.

Nucleus plants, Mr. Ahearn said, are not so much in the picture today as they were a while back. He thought that decreases in demand and the efficient operation of plants would be taken care of automatically by the

voluntary withdrawal of many producers for the duration. Many operators, he thought, might be squeezed out by ceiling prices and increasing costs of operation. This is not a healthy condition for the general public, he observed, which would need all these plants in the construction period following conclusion of the war.

Round Table Discussion

ONE WHOLE SESSION of the National Sand and Gravel Association's annual meeting was devoted as usual to a round-table discussion of the engineering activities of the Association and to the operating problems of the industry in meeting specifications.

T. E. POPPLEWELL, member of the executive committee of the Association, presided, and the session opened with the report of STANTON WALKER, director of engineering, much of whose work the past year had to do with the war. In his survey of the consumption of critical materials by the sand and gravel industry, Mr. Walker was able to estimate that the production of sand and gravel in 1942 was about 20 percent more than in 1941. His prediction for 1943 was that the first two quarters would be about the same as the first two quarters of 1942.

Mr. Walker found that 93 percent of the production reported was rated A-10 or better, which meant under the old priority rating basis, that 93 percent of the products were being used directly or indirectly for war purposes.

The rest of Mr. Walker's report was a summary of the laboratory and research activities of the Association, among which are studies of the durability of aggregates. These are of great interest to all producers, particularly those who have chert gravels to contend with.

FRANKLIN K. WILLS, Warner Co., Philadelphia, Penn., acted as chairman of a panel of experts to answer questions in regard to engineering and operating problems; this panel consisted, besides Messrs. Walker and Wills, of CHARLES W. ALLEN, acting chief engineer, Ohio State Highway

Testing Laboratory; A. H. HINKLE, district engineer, The Asphalt Institute.

Sand Grading

The first subject introduced was that of grading sand to eliminate too much in the intermediate sizes 16- to 50-mesh. Mr. Wills said the Warner Co. solves this problem by taking out a building (mason's) sand, through traps in the bottoms of launders. Removable plates covering screens in the bottoms of launders, or flumes, permit tapping and diversion of the excess medium sizes. These intermediate sizes retain enough of the minus 50-mesh to make good plaster and mason's sand. Reducing the percentage of 16- to 50-mesh sand automatically raises the percentage of minus 50-mesh in the concrete sand. The launders, Mr. Wills said, are rather flat, and their inclination can be changed according to the product desired to be removed. The velocity in the launders is fairly constant.

The problem of getting enough fines (minus 50-mesh and up to 100-mesh) was brought into the discussion. Mr. Wills said the primary consideration is constant examination of the overflow waste to see how much of the fines are there and recoverable. He said he had no experience in making fines by crushing coarser particles.

JOSEPH P. LUCAS, Ohio River Sand and Gravel Corp., Parkersburg, W. Va., described his experience in crushing sand with rolls. In their present Ohio River dredging operations where two sizes of gravel and one of sand are made on the dredge, he thought the fine sand was lost. He said the answer was to dig the river sand and transport it in the rough to shore plants, where facilities could be installed for recovering and crushing fines.

Aggregates for Bituminous Mixtures

Mr. Hinkle discussed the qualities of aggregates for bituminous mixtures in general terms; repeating what has been said many times before, that rounded or uncrushed gravel was a satisfactory aggregate for dense mixes, while crushed gravel is

(Continued on page 87)



Pres. Garvin Pelsue, N. R. M. C. Assn.

STANTON WALKER, director of engineering, National Ready Mixed Concrete Association, presented his report at the Thursday afternoon meeting presided over by Stephen Stepanian.

Mr. Walker's report outlined the various engineering activities of the association staff. He said that an important function during the year had been the furnishing of information to the War Production Board and other governmental agencies. He mentioned as an example the work represented by the compilation of the list of repair and maintenance parts required by the industry. Other information was compiled on production, value, and amount of employment in the industry.

Referring to the publication program, Mr. Walker said that material is available but there had not been sufficient time to get out any more publications than those which had been issued. However, he said more of this work should be done. In the matter of representation before various technical groups, he reported that the A.S.T.M. Specification for Ready Mixed Concrete was finding broader acceptance. The A.C.I. Recommended Practice for Proportioning, Mixing and Placing Concrete reflected knowledge of the industry. Many specification problems continue to arise in spite of this work.

Specific reference was made to the current A.S.T.M. Tentative Specifi-

Engineering Activities

cation (C 94-42 T) which had some shortcomings that should be corrected, if possible. Some refinement of the specification is necessary with regard to time limits of mixing, consideration of the effect of blade wear and depreciation of mixer parts, and the requirement covering maximum and minimum revolutions of the drum or blades. Batching procedure requirements and acceptance tests also should be clarified. Some special problems also have arisen with the use of calcium chloride in the mix. Studies also should be made as to the actual effect of grinding in the drum. Difficulties also have been encountered in the handling of "grinding aid" cements and blends of natural and portland cement.

In 1942, said Mr. Walker, production of ready mixed concrete reached a total of 15,000,000 cu. yd. It is now generally accepted, although Maine, Nevada and New Hampshire prohibit central mixed concrete but permit transit-mixed concrete by special permission. Delaware and Rhode Island prohibit transit-mixed concrete, but permit central-mixed concrete. Mr. Walker in closing referred to the research work of the sand and gravel association, much of which concerns concrete.

Forum on Control of Quality

GLENN C. COOK, American Builders Supply Co., Louisville, Ky., presented a very interesting report on tests of "Effect of Time of Haul on Strength and Consistency of Ready Mixed Concrete" which he illustrated with slides. Two groups of tests were made, each group consisting of tests of three batches of concrete. The first group was carried out in the early spring with air temperatures of 38 deg., and the second group was carried out in July with temperatures of 93 deg. The usual tests of moisture, sieve analysis, unit weights, specific gravity, etc., were made from the aggregates. Samples of the concrete were taken for making slump tests, Dunagan Analysis test, cylinders, etc. Temperature of concrete, air temperature, relative humidity, slump, etc., were recorded. The truck was driven over a route representing average conditions for 30 minutes, returning to the plant for the same

tests to be repeated. These tests were repeated until the slump dropped from 5 in. to between 1 and 2 in. At this time samples were taken for two sets of cylinders, one set being made from this concrete and the second set from a sample that had been retempered to the original slump. A Dunagan Analysis was made from the last sample for use in comparing with the mix having a low slump. The batch consisted of ingredients for 3 cu. yd. of concrete with five sacks of cement per cubic yard. Maximum size of aggregate was 1 in. An agitating speed of 4 r.p.m., and water-cement ratio and sand and gravel proportions were selected to give a 5-in. slump. Cement meeting requirements for both Types 1 and 2, regular and modified low heat, was used.

Slides of the test data showed that for air temperatures from about 40 deg. to about 80 deg. there is no appreciable loss in strength due to hauls of several hours except for loss of workability. Loss of slump was corrected by retempering with an average loss in strength of about 10 per cent. The grinding action as observed and from investigation with the Dunagan Analysis probably was an increase in sand due to grinding gravel to sand sizes and an increase in cement due to grinding of sand to cement sizes. The increase in cement as given by the Dunagan Analysis was only about 5 per cent, the only effect of which was to increase workability.

In the discussion which followed, D. D. REYNOLDS of Boston asked whether an 80 percent of capacity load instead of 60 percent would have affected the tests. Mr. Cook expressed the opinion that it would not. H. F. THOMSON pointed out that workability is not reflected by the slump tests. Transit mixed concrete, he said, after long delays in delivery often is better concrete as far as strength and placeability is concerned. In answer to HERBERT JAHNCKE, Mr. Cook said that the use of high-early-strength cement would have a determining effect on the time of haul. Replying to LION GARDNER, Mr. Cook said the aggregates in both cases were saturated.

READY-MIX

Requirements for Ready Mixed Concrete in Highway Construction

Jos. F. BARBER, assistant engineer, Ohio State Highway Testing Laboratory, told about highway requirements for ready mixed concrete in Ohio. He reviewed the gradual recognition of ready mixed concrete in his State from 1922, when first mentioned in the specifications, until the present. Mr. Barbee said that the State specifications did not differ very materially from the association standards. For example, in Ohio 50 r.p.m. is the minimum as compared with 40 r.p.m. for the association; in the matter of maximum delivery time, it is one hour in Ohio and 1½ hr. in the association standard. Ohio classifications run from A, requiring 7 sacks to a cu. yd., to E, requiring 6 sacks of cement per cu. yd. There are three primary types of work: 1—Contract jobs as an alternate to roadside concrete where regulations are followed as to proportions, water-cement ratio, etc.; 2—Maintenance work where concrete is purchased by class, and 3—Small quantities bought by class for repairs, but this is classified 1 to 4 with no control of design and mix although there is control of water-cement ratio. Mr. Barbee also discussed requirements as to capacity of plant and adequacy of equipment, storage bins, etc. About 50,000 cu. yd. of ready mixed concrete was used by the Ohio highway department in 1942, which was 25 per cent of the work. Q. W. BEST of Los Angeles asked about 6-sack cement per cu. yd. concrete. Mr. Barbee said that this concrete tested 3200 lb. in seven days.

Recommended Practices

STANTON WALKER presented the report on Activities of Committee on Recommended Practices for Controlling Quality of Ready Mixed Concrete. Mr. Walker referred to the action of the Board of Directors on Tuesday in authorizing the merger of the Technical Committee and Standards Committee to form the Technical Problems Committee which would have two subcommittees: (a) Committee on Methods of Weighing and Measurement, and (b) Committee on Recommended Practices for Controlling Quality of Ready Mixed Concrete, and the continuation, as a working committee, the Committee on Truck Mixer and Agitator Standards. Mr. Walker outlined in considerable detail the proposed contents of the Manual on Recommended Practices and called for criticism.

His letter of January 15 included a copy of the complete report.

D. D. REYNOLDS of Boston wanted to know whether the subject of workability would be included in the Manual. C. F. MULLEN asked if the graphs previously published in the older manual could be placed together in the new Manual.

C. GRAY of American Aggregates Corp., Indianapolis, asked about requirements for the storage of aggregates. He mentioned the use of a low-head vibrating screen for dewatering gravel to control moisture. For sand, he said, tunnel reclaiming from storage is most satisfactory. P. Y. HOWAT of the Howat Concrete Co., Washington, D. C., told about the use of the Scientific Concrete Service Corp., equipment for quickly determining moisture content in batching operations.

L. V. MADSEN of the Twin City Ready Mix Concrete Co., Minneapolis, Minn., has developed a very handy master table which he uses in quickly arriving at the net weights for aggregates and in computing the pounds of added water for any given mix. Since the table is based on oven dry weights, the values for wet weights are constant, regardless of the percentage of absorption of the aggregates. Any plant may use the table by simply correcting for free water if the aggregates have an absorption other than one percent.

C. GRAY questioned the mixing time requirement for a central mixing plant. He said on one job he had used 50 seconds mixing with no appreciable difference. LION GARDINER said no tests have been made recently, but the larger mixers have given better Dunagan tests. ART LEVISON told about the Grand Coulee Dam tests where the mixing time was reduced. G. K. VIALL said that the best results were obtained with the paving mixer. As you get into the smaller sizes, he said, more difficulties are encountered.

ALEX FOSTER pointed out that mixers are designed for a certain set of conditions. A high specific surface area of cement will affect the mixing. IRVING WARNER said the problem is to get all material in the mixer quickly. His company uses a large mixer to get the materials in quickly, but the discharge was slowed up into the weigh batcher by baffles to prevent jamming and thereby increase speed of mixing time. R. J. MOSS of Scientific Concrete Co., Washington, D. C., said that prolonged mixing may decrease strength but increase work-

ability. He said that grinding action on cement acts similar to dispersing agents. LION GARDINER asked about wash water. HERBERT JAHNCKE, New Orleans, said they threw the wash water away. H. C. SHIELDS told about a railroad job where a definite size container was used in measuring the amount of wash water used in the mix to control uniformity.

Secretary's Report

ALEX FOSTER, presiding at the Friday morning session, introduced Executive Secretary V. P. Ahearn, who presented his report. Mr. Ahearn referred to the wage stabilization procedure of the W.L.B., and suggested that if any wage adjustments are to be made, the matter should be referred to the W.L.B. for a written opinion. He also brought up various situations where the three percent property for hire tax may be passed on.

Turning to the O.D.T. ruling with respect to tire inspection, he said that the O.D.T. had agreed to the regulation that a competent man be designated for the work rather than provide for inspection off the property. Mr. Ahearn suggested that an inventory be made of every employee as to his possible draft status for the purpose of seeking deferment when necessary. The PD-3-A priority for repairs and PD-1-A for new equipment has been a life-saver, he said. P-100 with an A-10 rating has been effective in getting repairs to truck mixers. No trouble had been experienced in getting tires. The industry has been exempted from O.D.T. No. 17 regulation, requiring a 25 percent mileage reduction.

Referring to O.P.A., he said that the ready mixed concrete industry does not have to file prices with the local O.P.A. office as it is a producing industry and not a retail building supply business.

Care of Truck Tires

R. D. EVANS, Tire Testing Division, Goodyear Tire and Rubber Co., gave an interesting talk on the Care of Truck Tires to Insure Maximum Mileage, which he illustrated with slides. Before launching into his subject, Mr. Evans told about the possibility of synthetic tires. He said that Buna S and reclaimed rubber are the only materials available of immediate concern. The place where these materials are used in the carcass of the tire, he said, is important. Graphs on the slides showed the ef-

(Continued on page 90)

CALCINATION

Controlling Factors For Efficient Rotary Lime Kiln Operation

Kiln feed—Uniformity in size and quality—Uniformity in rate of loading—Kiln rings, causes and prevention

Heat conservation

By RALPH GIBBS*

IN A PREVIOUS ARTICLE (November, 1942) some of the problems connected with the preparation and use of fuels in rotary kiln operations were discussed. Equal in importance to fuel as a raw material is the substance being processed, and some of the problems associated with the kiln feed can be discussed at this time.

Kiln Feed

Into the hot-breath-exhaling gullets of rotary kilns are pumped, poured, rolled or chuted a miscellaneous assortment of concoctions without end. Some are coarse and some are fine. Some are both coarse and fine. Some are wet and some are dry. Some are simple and others are complex. It is no cause for wonder

*Consulting chemical engineer York, Penn.

that at any time signs of distress may manifest themselves in the gigantic digestive tract.

Regardless of the kind of material being processed, **UNIFORMITY** is the all-important watchword if highly efficient kiln performance is to be attained.

The cement industry fully realizes the significance of uniformity and almost extreme efforts are made to deliver to the kiln a rather complex material, yet extremely uniform and consistent in its complexity. Laboratory control of the condition of the raw material is rigorously maintained. Mammoth tanks of slurry, constantly agitated, are considered essential in attaining the greatest possible uni-

formity; a tremendous outlay of capital in appreciation of a recognized fact.

And yet how lightly this same problem is treated by many of the other industries using the rotary kiln as one of their vital tools! To them uniformity of size is a law to be transgressed against to the highest degree without disregarding it altogether. Chemical or constitutional quality is almost equally considered just so long as the finished material meets or anyhow almost meets the desired specifications.

It is true that Nature has not always been kind in Her disposition and quality of many of the mineral deposits Man is attempting to adapt to his use. And with such as these Man can only do his best.

Physical Uniformity

The meaning to be conveyed is all that the words imply. Physical uniformity includes those characteristics of size and texture which, to a certain degree, are under the direct control of Man. Of course there are those friable minerals which, under the influence of quickly changing temperature, will be shattered and suffer physical disintegration. Yet the great majority of the mineral substances used in the rotary kiln behave in a reasonably respectable manner.

In most instances the mined or quarried product is subjected to

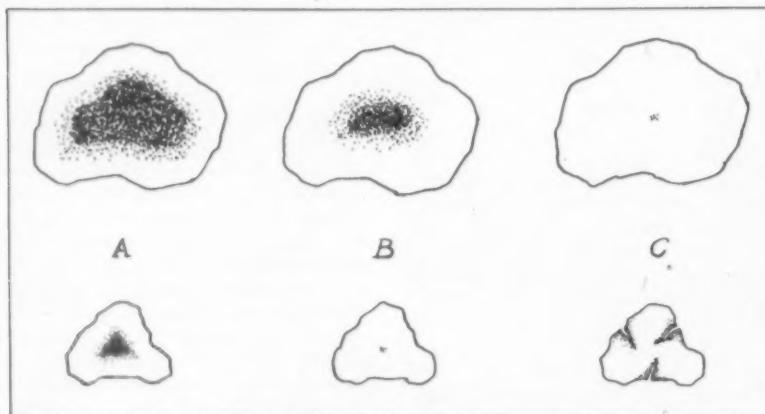
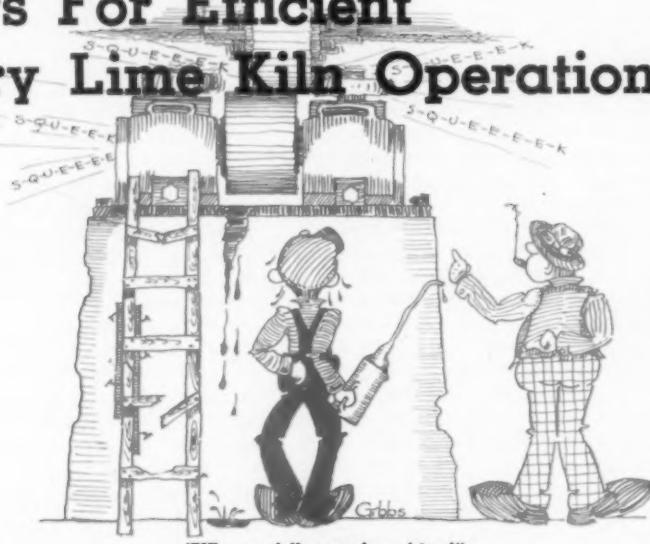


Fig. 3: Illustrates the different states of calcination exhibited by two differently sized pieces of limestone when calcined together



"When a feller needs a friend"

CALCINATION

crushing and screening processes to produce material of a size suitable for further processing in the rotary kilns.

It is not good practice to attempt to process in the kiln at the same time all the various sizes produced. The results generally are very unsatisfactory for reasons quite obvious.

In the first place over-processed or under-processed material will be produced. Fig. 3 illustrates the different stages of calcination exhibited by two differently sized pieces of limestone during the course of being calcined together.

At A is shown the partial calcination of both pieces. The cores are enveloped in their casings of lime to about the same extent in each piece. At B we see the complete calcination of the small piece of stone while the large piece still contains a substantial core. At C we observe the complete calcination of the larger piece, but the smaller piece, finished material at the B stage, now has become hard or dead-burned. If the material is discharged from the kiln at stage B the larger pieces are underburned, while if discharged at stage C it will contain particles of over-burned lime.

As a consequence, great care must be exercised in fixing the maximum and minimum sizes of raw materials to be processed in the kiln at any one time.

In the second place, excessive quantities of "fines" will prove troublesome in other ways also. By "fines" is meant that portion of the products of the crushing operation which will pass through a 0.075-in. opening.

Observation will reveal that these fines, when in the presence of a majority of coarser particles in the kiln, are not evenly distributed throughout the cross-section of the load despite the continual rolling or turn-over it undergoes as the kiln rotates. Instead, the finer particles seem to concentrate in a zone adjacent to and even in direct contact with the inner surface of the kiln. The darker portion of the load section shown in Fig. 4 gives a general idea of this behavior.

When it is recalled that the kiln walls are at a temperature greater than the average load particle we can appreciate what the results will be, especially since these fines are generally higher in impurities than the larger pieces and of a type that lower the fusion point of the mixture.

Further observation of the behavior of a kiln load containing excessive

quantities of fines occasionally shows the tendency toward segregation or "banding" as the load travels through the kiln. Fig. 5 illustrates a portion of a kiln wherein the load is made up of alternate sections of coarse and fine material. This is especially noticeable when the load is light and when there are obstructions in the kiln. The cause for this singular behavior is not definitely known, but is believed to be caused by the retention or the building up either of the fine or the coarse particles behind the obstruction to a point where the accumulation finally surges over, and the cycle is repeated.



Fig. 4: Showing tendency of finer particles to concentrate in a zone adjacent to and even in direct contact with inner surface of the kiln

Thus with excessive quantities of fines in the kiln load, conditions are such that trouble can be expected in the form of rings and heavy coating in addition to those previously discussed.

In order to overcome these difficulties due to the extreme fines, some plants resort to washing the stone with water. Still others dry the stone before the final screening to insure a reasonably complete removal of the fines.

Chemical Uniformity

As previously mentioned, the modern cement industry strives for the greatest practical uniformity not only physically but also chemically.

Those industries which process mineral material, the only prior preparation of which consists in crushing and sizing, are fortunate indeed if their deposit of raw material is chemically uniform in character. As a general rule satisfactory deposits are accompanied by strata of grossly inferior material and unless great care is exercised during the mining or quarrying operation, some of the in-

ferior material very likely will be included. This is especially true when the good deposit is thin, or where faulting, slipping, or folding has distorted the deposit, or when working adjacent to an inferior stratum. It also has occurred because some obstinate quarry foreman or superintendent has to prove the rule of uniformity to himself before he will believe it, and in most cases he never is convinced. So the good and the bad go merrily on together. Regardless and in any event, the greatest possible care should be taken to include as little of the unsatisfactory material as practicable.

In some instances the impurities are so distributed within the body of the desired substance that separating processes are used, not with the object of assisting the kiln in the performance of its work, but rather to meet some predetermined standard of purity.

Nevertheless **UNIFORMITY** remains the watchword, and toward attaining this end, very reasonable effort should be devoted. Even a uniformly distributed impurity is less troublesome than if unequally distributed.

The trouble it is possible to incur because of the non-uniformity of the impurities is not difficult to comprehend. Generally these impurities affect a lowering of the fusing point of the material, either within itself or in chemical combination with the dominant material. Consequently under the influence of heat at some particular temperature encountered during its travel through the kiln, the impurity or its chemical component will fuse and attach itself to the object or objects with which it is in contact at the time.

Since the kiln wall is at a temperature greater than the average load particle, the fusion occurs while the low-refractory particle is in contact with the kiln wall. The nasty part of the whole business is that in its fused and sticky state, other more refractory particles become cemented to the kiln wall. Thus several otherwise normal particles are removed from the free load by one inferior particle. And when it is realized that tons of material are involved and pass this same position in the kiln every hour, it is no cause for wonder that an accumulation soon will be hanging to the kiln wall. Such a realization should develop a profound respect for chemical uniformity.

The previous article touched upon

(Continued on page 96)



Alfred J. Miller, Pres., Whitehead Bros. Co.

THE LITERATURE on foundry sands is fairly prolific—in the textbooks and records of foundry men—but scarce in the records of the sand industry. What makes a natural foundry sand? Well, that's always been something of a mystery to the uninitiated; and, although there has been a lot of research done on the part of foundry men, the mystery still exists as to why some particular deposits are so superior to others.

Attempts to improve on natural foundry sands have been numerous, and not always successful. A dyed-in-the-wool foundry sand producer seems still of the opinion that certain natural sands just can't be improved upon. And there are still many foundry men who insist on certain natural

sands for special purposes. That has been the reason for 100 years' success of a sand producing concern, which in all that time has stuck to its specialty and never been diverted into other markets that have attracted industrial sand producers generally. Whitehead Brothers Company, New York City, is that concern. While it has kept pace with research and practice in the production of synthetic foundry sands—so-called, because they are compounded of different sizes of sand and special clays—it has never departed from its first and greatest love, natural molding sands.

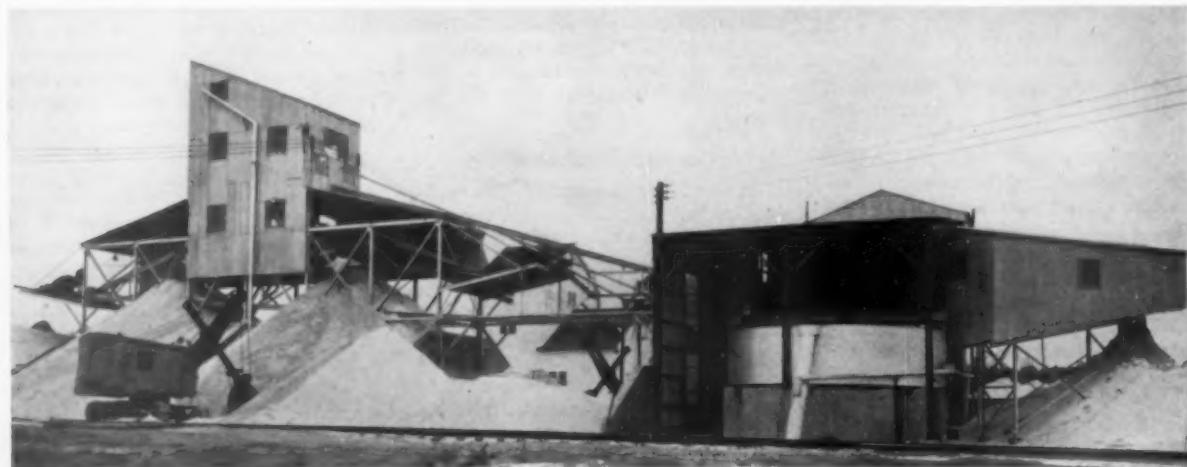
The founder of the company, Samuel Whitehead, whose portrait hangs over the mantel in President Alfred J. Miller's oak-paneled office in the company's New York headquarters, was an Englishman who came to this country about 1820. He bought a New Jersey farm and raised fruits and vegetables for the New York market, bringing in his wares in his own sloop. One day he was shown some imported foundry sand and was asked to search his farm to see if he couldn't find some like it. He did, and thus started the Whitehead foundry sand business.

According to the family traditions, in 1841, while preparing to tile drain some of his farm land, he found what proved to be naturally bonded foundry molding sand. From this small beginning he prospered as a foundry sand producer and died in 1873 at the ripe old age of 79, leaving apparently a name that will be associated with the foundry sand industry as long as foundry sand is used. There are rumors from time to time that this, that and the other thing are replacing foundry sand, but that has been so for many years now, and Al. Miller, the great-grandson of Samuel Whitehead and the present head of the company, seems unperturbed by any fear of losing the markets created 100 years ago.

Samuel Whitehead had five sons, Charles, William, John, James and Samuel, whose portraits also hang on the walls of Mr. Miller's office. The two oldest continued the father's New Jersey sand business. The other three brothers went forth to shift for themselves—in the foundry sand business they had learned from their father. One pioneered on Long Island; another explored the Hudson River valley around Albany, where he discovered and developed various de-

Foundry Sands

Whitehead Bros. Co., specializing in foundry sands for over a century, has made some interesting additions to plants and equipment



General view of the new No. 2 plant of Whitehead Brothers Co. at Dividing Creek, N. J. HydrosePARATOR and thickener building shown to the right

INDUSTRIAL SAND



Left: Sand Classification and dewatering section of No. 2 plant, Dividing Creek, N. J. Right: Close-up of the classifier for fine sand dewatering, thickener, and hydroseparator

posits of the already famous Albany molding sand. Later he was joined by another brother. The Long Island brother strayed from the foundry sand business to making brick, but the other four stuck to it.

The brothers conducted their operations under various copartnerships, with a central selling organization, until 1892, when their interests were consolidated in the corporation, Whitehead Brothers Company. That is the year the office, warehouse and laboratory building was erected at 537 West 27th St., on New York's lower west side. Various other activities, all connected with the foundry trade were added.

It is still a family company. The following members of the family are active: fourth generation, Alfred J. Miller, grandson of William; James H. Whitehead, grandson of James;

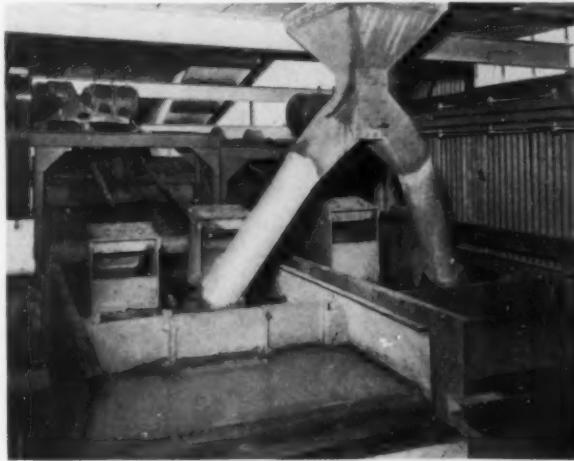
Van Loan Whitehead, Jr., grandson of James; fifth generation, William Whitehead, great-grandson of James.

Al. Miller just grew up in the business. His mother was the daughter of William Whitehead, one of the five original brothers, and his father, Alfred J. Miller, Sr., was the company representative at Providence for the New England territory and Canada.

The company is remarkable not merely because it is a 100-year success, but, as we said in the beginning, because it has refused to be diverted into other industrial sand markets. It was started, by gosh, to serve the foundry industry, and serve this industry it will, as long as there is a foundry left! It's an old-fashioned idea in these days of diversification and so-called progress, but it has worked for five generations of the Whitehead clan.

Whitehead Brothers Company owns and has under lease tremendous holdings of foundry sand properties in New York State, New Jersey and New England. Most of its production is of naturally bonded molding sands, for which these regions are famous, but core sands and all the other foundry sands are dug. Shipments are made from coast to coast, to Canada, West Indies, Central and South America and even to European ports.

Experience in prospecting and preparing these sands is essential, which can be readily seen when studies are made of the deposits. A study of the geology of natural molding sand deposits and other foundry sands is necessary to an understanding of the production methods and in order to determine why particular sands are better than others. Many natural molding sands used in foundries are



Left: Overflow end of classifiers for dewatering of intermediate sizes at No. 2 plant. Right: Discharge end of classifiers





Caving bank to feed portable conveyor loading truck

produced in just a few States for the reason that they are scarce and were discovered there. Geologic processes put them there and gave to them certain desirable characteristics. Sands excavated in the Hudson River Valley (Albany sand) and South New Jersey were blessed with qualities that have made them world famous for foundry use.

Physical Characteristics

Most foundry sands are sedimentary and different grades occur in a given deposit because of the variations in geological processes that formed them. Basically, natural molding sands consist of silica grains coated with a "clayey" substance that bonds the grains together to form foundry molds. The great glaciers and ice sheets that covered part of our country in ages past, together with the action of wind and water, figured in their formation. Molding sands occur in glacial deposits, terraces, terminal moraines, outwash glacial deposits, marine deposits and on the shores of lakes. Quartzites and other siliceous rocks were ground down to grain sizes and deposited and classified under variable conditions. Weathering and chemical action caused the breakdown of the less resistant minerals, deposited with the hard, quartz grains, into the "clayey" bonding materials

which make a sand a molding sand. The bonding material is not actually clay but a mixture of oxides and hydroxides of iron, alumina and silica that form a colloidal coating on the silica grains. It makes them stick together so molds can be shaped.

What makes a particular natural bonded molding sand superior to others? A combination of physical properties inherent in it because of natural processes will make sand from one deposit better than another for certain uses. Certain grain sizes are better than others for different kinds and sizes of castings and the sizes and shapes of the grains and the amount and character of the bonding material determine how and where a sand can be used.

Physical characteristics of the sand are far more important than chemical qualities. In general, a foundry considers grain sizes, grading, permeability, cohesiveness, durability and refractoriness in selecting a sand. For the sake of the uninitiated we will touch upon these qualities briefly, in order better to understand the Whitehead deposits and methods of production.

Permeability is a measure of the ability of a molding sand to allow gases and liquids to pass through a mold made from it and is of great importance in molding sands, molding gravels and core sands. A high permeability sand has good venting qualities because of its openness, which can be measured according to American Foundrymen's Association recommended tests. It can readily be seen that grain, size, particle shape and the amount and kind of bonding material influence the permeability. Generally, the finer grained sands



Looking down on hydroseparator and thickener at No. 2 plant

INDUSTRIAL SAND



Amboy, N. J., mill showing millers for mixing Bentonite with silica sand and large rotary screen to take out over-sizes

have lower venting ability and are therefore to be preferred, generally, for smaller castings where a smaller volume of gases must escape. Fine grains also make a smoother finish to the casting. They can be used for big castings if properly opened up with vent wires or a larger grained sand could be used for small castings by having a special facing mixture. The percentage of moisture is a consideration too. Some natural bonding materials require more water than others, which might turn out to be a disadvantage. The bond should be tempered to coat the sand but not so as to clog the pore spaces.

Cohesiveness is the ability of the sand grains to stick together, or cohere, upon proper tempering with water. Too much bonding material, too little, the wrong kind or improper tempering are common causes of burnouts and defective castings. The term "green strength" is the strength of the moist molding sand. Refractoriness is the measure of a sand's resistance to heat. It should be high in silica and low in materials that will flux. Sands used for steel castings and for furnace bottoms should have very little lime content. Low refractory sands will fuse with the casting and is expensive to clean off.

Durability of a sand determines the frequency of burnouts and how much replacement sand will be needed in the foundry. Some sands will break down quickly while others will have their bond rejuvenated after casting operations, upon the addition of tempering water.

In general, the range in grain sizes

for molding sands is from 20-mesh to as fine as 270-mesh but grain sizes and grading are not expressed in terms of sieves. Grades are commonly identified by the A.F.A. fineness number or by some average fineness number. The A.F.A. grain fineness number is defined as the number of mesh per inch of that sieve which would just pass the sample if its grains were of a uniform size. It is proportional to the surface area of a unit weight of sand without clay substance.

Every purchaser writes his own specifications for molding sand and there are therefore no generally accepted standards. But he will want a

certain grain size distribution, strength, etc., which the successful supplier must meet. These are, however, standards for testing to determine a molding sands' value. A company like Whitehead Brothers Company has the experience and knowledge of foundry practice to determine the causes for foundry failures and by laboratory control constantly has kept pace with foundry practice and the solution of the foundrymen's problems.

Core sands are also produced by Whitehead Brothers Company. They are used to form the molds for the interior spaces in castings and are naturally bonded or, more often, they are sharp, pure sands to which a binder is added. Very fine sands even up to fine gravels are used. Usually the grains are coarser than 60-mesh. Organic binders are desirable because they are destroyed during the casting process and crumble. This facilitates removal.

High permeability is needed and the sand should be free from silt and clay and of a uniform grain size. Usually it is necessary to wash and size these sands. Dune and beach sands, with rounded grains, are often used.

Where Sand Is Found

Whitehead Brothers Company produces all kinds of naturally bonded molding sands, core sands and washed and graded products. Washed and graded sands are made for steel castings and for various synthetic sands in combination with fire clays, bentonite, etc. The various products will



Large storage of sand alongside railroad train with screening plant in background

INDUSTRIAL SAND



* Sand dryer building No. 2 plant with the dryers in the center, foreground



Portraits of the five sons of the founder of the business in the offices of Whitehead Brothers Co., which has a history extending over a century

be discussed along with a description of the geology of each region in which the company is active.

Whitehead Albany molding sands have a peculiar combination of all the properties desired that has gained for them tremendous acceptance. They have been used for 100 years

to make enamel ware, for stove-plate work, hardware, ornamental iron, malleable iron and all types of non-ferrous castings. It is said that more Albany sands are used by malleable and non-ferrous foundries than any other sand in the United States.

Albany molding sands occur in

scattered deposits within a narrow area on both sides of the Hudson River that extends 100 miles from the foothills of the Adirondack Mountains south into Dutchess County. At one time Whitehead Brothers Company was excavating at 70 different locations in the belt.

Geologists trace the molding sand area to the last advance of the Pleistocene ice sheet, something over 20,000 years ago. The continental ice sheet covered all of eastern New York State as far south as Long Island, picking up quartz from the Adirondacks and grinding it up into sand which was mixed with shales in the Hudson Valley. The retreat of the ice sheet was irregular and normal drainage was impeded in places, resulting in the formation of big lakes. One lake, known as Lake Albany, covered the area from which molding sands are now excavated, and deposited the sands and clays carried by the water. While no deposits can be considered as uniform, lake deposits are more so than those put down by rivers. Later, the Hudson River cut through the lake deposits to close the glacial period.

Then followed a period of over 20,000 years of weathering and chemical action that broke down the less resistant materials into natural bonding material. The wind worked over the sand and sorted it selectively.

Under these forming conditions a general average fineness would be expected, with minor variations due to shifting lake currents and sorting winds. Sand grains are angular to sub-angular due to lack of water erosion, and the distribution of the sand is non-uniform. Large boulders, prob-



Left: Portable screen and trimmer used in sections removed from permanent screening plants. Right: Permanent screen plant located in the Albany district is completely automatic



INDUSTRIAL SAND



General view of No. 1 plant of Whitehead Brothers Co., Dividing Creek, N. J. This is typical of the other older types of plants operated by this company

ably dropped from floating icebergs, are sometimes encountered. The best grades occur on the high terraces bordering the river valley, underlaid with shales and slates. All properties have great variations in all the qualities of the sand, which complicates production and makes it necessary to blend sand from different places. When occurring in a timbered tract or under heavy vegetation the sand, which is just under the surface soil, has stronger bond.

One deposit seldom covers more than five acres. Thicknesses vary from a few inches to 8 or 10 ft., but the general average is 18 in., right under the soil and following the topography closely. In the rare thick beds, there are sometimes distinct stratification planes and the sand might be split by thin sand or clay beds. Sometimes islands of material are left, to avoid this contamination.

It is necessary to dig the sand out by hand shovels for loading into trucks for delivery to stockpiles, or into cars or barges. By excavating in narrow strips and returning the 8 to 12 in. of topsoil into worked out area, the land can be re-cultivated. Often sand from several banks

must be mixed and great care must be exercised to keep from taking the underlying material.

Albany sands are famous for their texture but the grain is actually variable. In a 5-acre tract, grades from No. 0 (fine) to No. 3 (coarse) are usually found, and it takes plenty of experience and special training to separate them. The cohesiveness, which with texture determines the value, also disregards law and order. The bonding material is held so tightly to the sand grains that it can hardly be removed. It's almost part of the sand grains. The sand is light yellow to brown in color and this color is the "clay substance" or bond, representing about 15 percent by weight.

Bond strengths of Albany sands are not too great but the angular to sub-angular grain shapes interlock to give strength and at the same time high permeability. The sands are said to have unusual flowability into intricate and recessed patterns.

From what has been said it can be appreciated that certain deposits are better than others. Those where the low resistant minerals occurred in the right proportions are the best. Need-

less to say, Whitehead Brothers Company is constantly exploring and sampling deposits. Its holdings are widespread and it operates both permanent and portable plants. Today, it is digging, blending and screening at 35 points and has four central permanent plants and a dozen portable plants working in remote places. There are loading docks on both shores of the river and the barge canals.

Until the early 1920's, operations were comparatively crude. Then came the desire on the part of foundrymen for more uniformity and better screening. Root contamination and oversize pebbles had to be contended with.

Whitehead Brothers Company then installed laboratory control and screen equipment and partially centralized its operations. The first screening plant was put in in 1931 and there are now four plants of the company in the district. In 1940 over 80 percent of the product was screened.

Shipments are made from the Hudson River to New England, New York State and northern New Jersey points. Shipments for the midwest

(Continued on page 92)



Left: Typical Albany, N. Y., deposit, showing bench of molding sand, stripped, cleaned and ready for removal. Right: Typical South Jersey bonded molding sand bank



CONVEYORS

Practical Operation Conveyor Belt

Part 6: Things to consider in selection of a new conveyor

TECHNICAL PHASES of the design of belt conveyors are covered by text books and in considerable detail by handbooks and catalogs published by the manufacturers of conveyor machinery and belts. It is unnecessary to repeat these here except for a few practical considerations, based on experience, for conveyors handling crushed stone or gravel. In most of these publications a wide choice is given for the essentials of design, and it is left to the judgment of the designer to fix these for his particular set of conditions, according to his experience. He must select the proper belt widths and speeds, idler spacing, pulley diameters, belt construction and quality, angles of inclines, chute details, etc., within the recommended limits.

Speeds and widths must necessarily be considered together in a combination suitable for the required peak capacity. For these materials speeds should be chosen between 250 and 400

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By MELVIN C. DOW* and
HARVEY A. HARNDEN†

ft. per minute, depending on the conditions of the conveyor. For ideal loading conditions the following maximum speeds should be adopted:

Width of Belt Inches	Maximum Speed Ft. Per Minute
16-18	250
20-24	300
30	350
36 and larger	400

When the belts are to be loaded on an incline, from the side, from excessive heights, with large lumps or otherwise unfavorably, these speeds should be reduced about 50 ft. per minute in general. Special conditions may alter these. For example, a belt receiving large lumps directly from a crusher at high speed should operate at about 100 ft. per minute less than

these. Also a belt handling only screenings, properly loaded, which would be far less abrasive than larger size material may be operated at much higher speeds, such as grain conveyors are.

Determining Idler Spacing and Conveyor Inclination

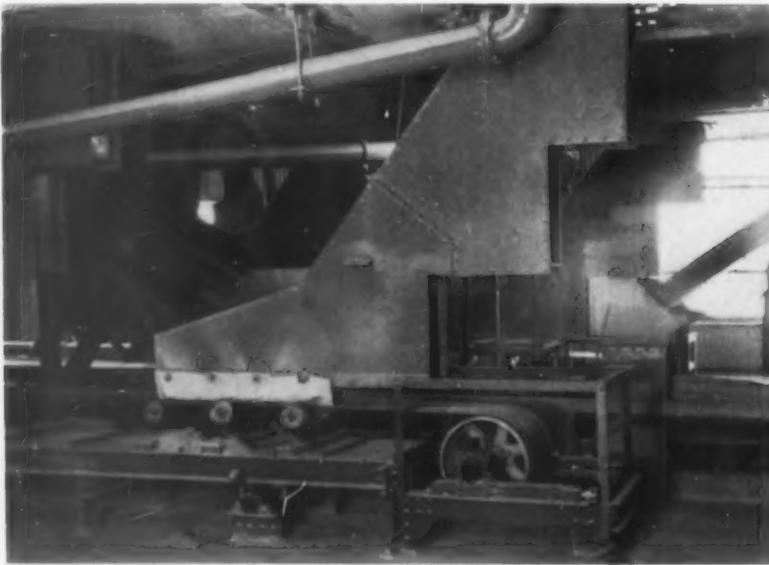
The usual tables published for maximum size of lumps for various belt widths give lump sizes which are too large. Considerable spillage results requiring greater operating labor and creating hazardous conditions. To correct this the operator will probably install long skirt plates, which so frequently cause early belt injuries. A more conservative rule is to use a maximum size lump in uniformly graded material of $\frac{1}{4}$ of the belt width or in sized material of $\frac{1}{6}$ of the belt width.

The following table of idler spacing is recommended:

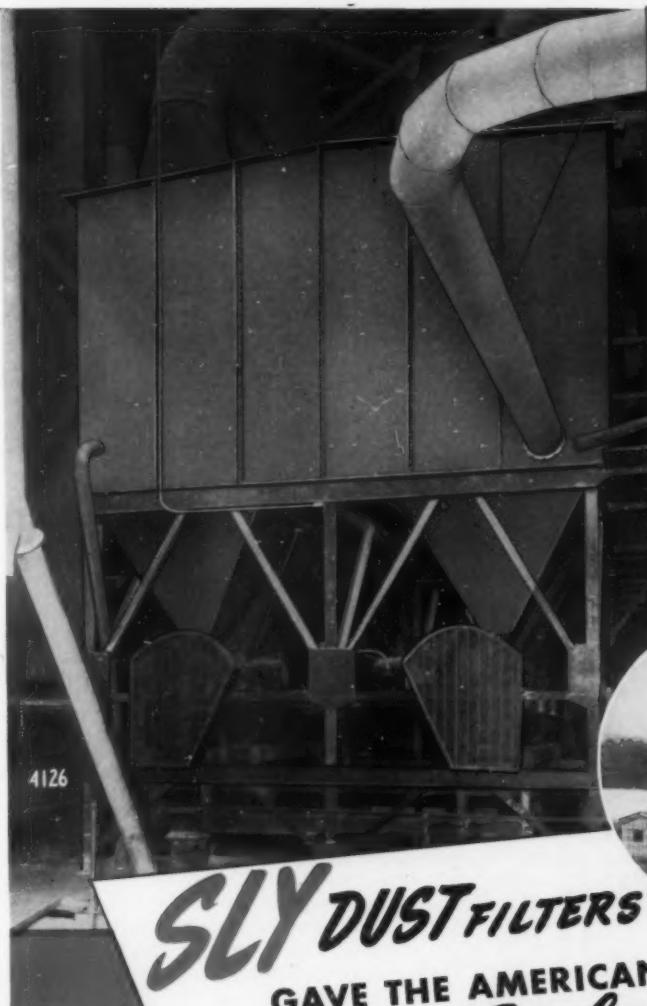
Width of Belt Inches	Carrier Idlers Spacing	Return Idlers Spacing
20 and smaller	4 ft. 0 in. to 4 ft.	10 ft.
30	4 ft. 0 in.	10 ft.
36	3 ft. 6 in.	10 ft.
48 and larger	3 ft. 0 in.	8 ft.

The old rule for minimum pulley diameters was to use five times the number of plies in the belt for the diameter in inches for the head pulley, similarly four times for the tail pulley and three times for the bend pulleys. This rule is still a good one for light belts but when they exceed 28 oz. duck the thickness of the belts and the stress in them should be taken into consideration. Goodyear's "Handbook of Belting" gives a table of "Normal Pulley Diameters for Conveyors" and one of "Conveyor Carrage Qualities." Pulley sizes may be selected from these using the latter to indicate the effect of over and under size pulleys on the quality of belt required which is an indication of the stresses caused by flexing.

The various handbooks differ in their recommendations of maximum angles of inclination for conveyors. The following may be considered as a conservative table of these:



Belt loading chute with stepped back construction for reduction of wear on bottom plates



There are three Sly Dust Filters in use in this plant. The one shown at left filters the fines out of 41,000 cu. ft. of air per minute, exhausting crushers, grinders, magnetic separators, screens and conveyors. The collected fines are conveyed continuously from the filter hoppers to two 75-ton storage tanks.

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Belt loading chute under crushers equipped with exhaust dust hood. An excellent design except for the side plates which should be sloped to relieve wedging of stones between plates and belt. The result of this can be seen in mutilated cover

Size of Material

Uniformly graded, fine to coarse.....
Sized stone or crushed gravel.....
Sized gravel (round particles).....
Sand or screenings.....

These may be exceeded if the conveyor is not to be loaded on the incline or if limited distances are available but in this case spillage may be

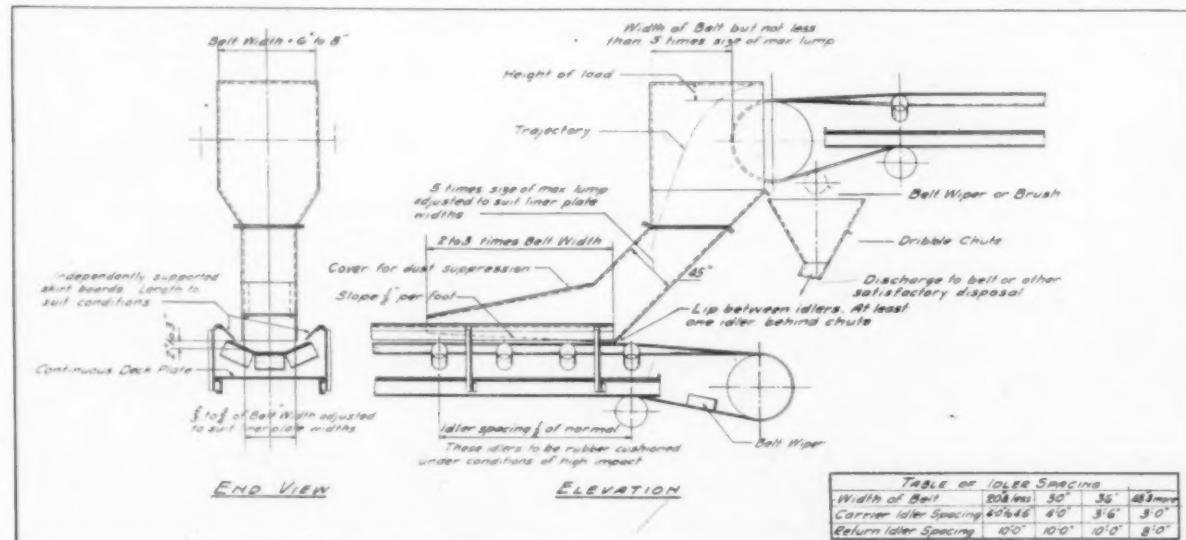
Maximum Angle of Inclination

18 deg.
16 deg.
14 deg.
22 deg.

expected when the flow of material on to the belt is started or stopped.

The ideal belt loading chute might be described theoretically as deliver-

ing the material at the surface of the belt and traveling in the same direction and at the same speed as the belt, distributing it in a well rounded pile over nearly its full width. It might be possible to design such a chute, if the conditions did not vary, with a curved back, rounded throat, and warped sides. However, such a



Discharge and loading chutes and skirt boards for standard design belt conveyor

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CONVEYORS

shape does not lend itself well to ordinary methods of construction; it would be a "fancy" chute and unnecessarily expensive. Chutes are made of flat steel plates lined with flat wearing plates on the surfaces exposed to the flow of the material as previously described. Modern tendency is toward welded construction for economy.

The back plate should slope at 45 deg. in the direction of the belt travel and be loaded to deliver the bulk of the material at a point between carrying idlers. A loading chute at the tail end of a conveyor should deliver the material at a point ahead of at least one idler. Idlers should be spaced under chutes at approximately half the normal spacing and should be of the rubber cushioned type where heavy lumps are being loaded.

Grizzly backed chutes designed to deliver fine material to the belt first are usually found to be unsatisfactory. Where self cleaning chutes are not required the back of the chute may be boxed, that is, it may be vertical with a solid bottom plate so that material lies in it at its natural slope, thus eliminating the bottom wearing plates.

The width between the side plates at the bottom should be $2/3$ of the belt width for normal conditions. This may be increased to $3/4$ the width of the belt where the load is light in order to distribute it over the full width of the belt and prevent excessive center wear. Where the belt is heavily loaded this should be reduced and the bottom edges of the chute raised in order to heap up the load higher in the center of the belt allowing it to flow under the side plates out to the edges of the belt. The length of the side plates along the

belt should be two to three times the width of the belt, depending on the speed.

The back plate at the *lower corners* where the material is first delivered to a belt which is not already carrying material should be 2 in. to 3 in. above the belt at this point, depending on the size of material being handled, the lower figure being used for fine sizes and the higher one for material of one inch or larger. This dimension is to the belt at the *corners* considering the contour of the belt in cross section.

The bottom edge of the side plates for a level belt should slope up from this point in the direction of the belt travel about $1/2$ in. per ft. This slope is approximate and should be determined when consideration is given to the width of the chute, the length of the side plates and the resulting height above the belt at the forward end of the side plates. This height should be such that the material will flow out laterally under the side plates to a safe point near the edge of the belt, not overflowing but well distributed across the belt. Again the contour of the cross section of the belt must be considered. The purpose of this sloping side plate is to allow the material to flow out under it yet not wedge between the plate and the belt resulting in damage to the cover.

Where a chute discharges on a belt already carrying some material these heights must be increased to clear the previous load.

A notched bottom plate is frequently used in belt loading chutes but is usually unnecessary. It tends to place the load, especially if it is light, in the center, instead of distributing it over the width of the belt, causing excess wear at that point. Where a

belt is already carrying some load such a bottom plate is effective in placing additional load in the center of the previous material. Also where a belt is being loaded from an angle the bottom plate may be cut out in the field until a shape is found which uniformly distributes the load over the belt.

Supports for loading chutes should be of sufficient rigidity to prevent displacement of the chute and placed so as to clear the belt if it should run off line.

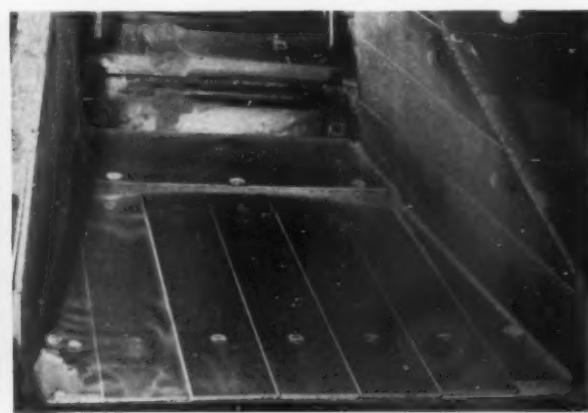
Skirt Boards

It is frequently necessary to install skirt boards at loading points of conveyors, especially when loading on an incline, on a fast belt, or when placing a light load of sized material on a belt, in order to prevent spillage. These skirt boards cause greater numbers of early belt damages than any other single item. This is true of those improvised structures tacked and wired in place by the operating millmen.

When it is found necessary to install skirt boards why not make them of a permanent nature installed in a workmanlike manner free from the belt at all times? They are best supported by independent brackets from the conveyor rather than connected to the chute side plates. These brackets should be placed out far enough from the edge of the belt so that the belt will not come in contact with them if it should run off line. The skirt plates should be placed very near the edge of the belt but not outside of it and they should be above the belt and not in contact with it at any time! They may be of wood or light metal and placed either vertically or at a slight angle from the vertical.



Left: Improvised skirt board design which is causing edge wear. Right: Example of $1/2$ x 6-in. removable spring steel liner plates in chute secured with ordinary flat head bolts





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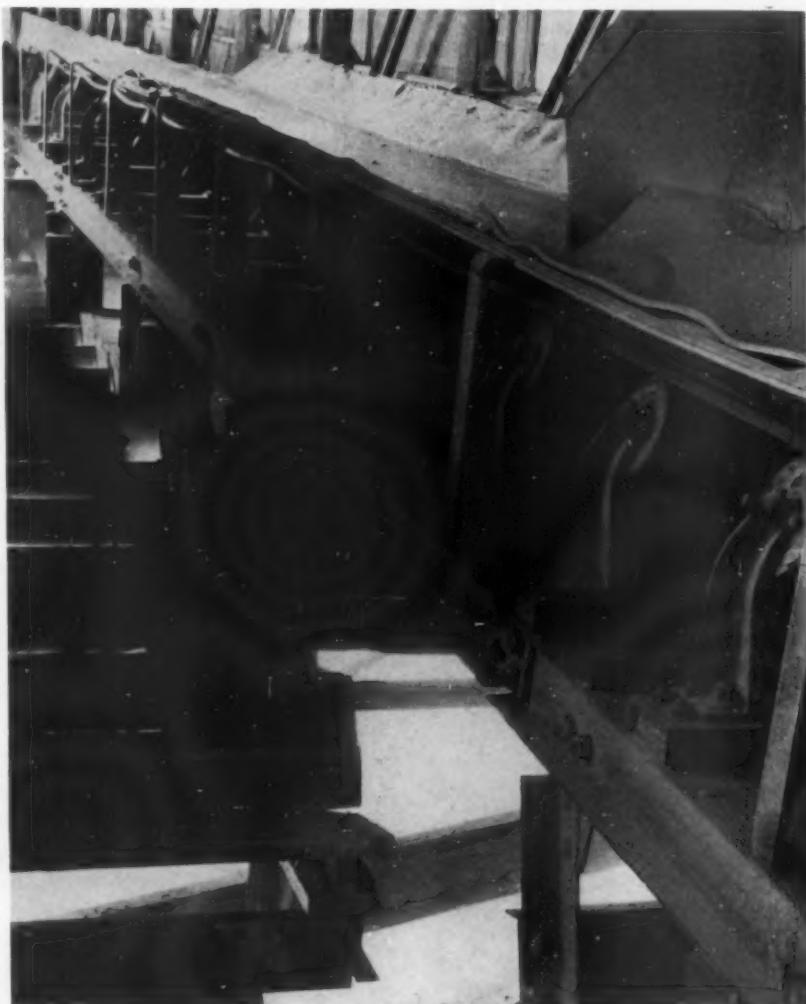
DEMPSSTER DUMPSTER

When it is found that the material being transported is continuously in contact with the skirt board and dust leaks out to an objectionable extent, or that small stones become wedged under the edge of the plates it may be necessary to fasten a rubber sealing strip to the skirt boards. We wish to emphasize the fact that these strips are necessary only under very poor loading conditions. When they are found to be necessary the skirt boards should be placed at an angle of about 45 deg. from the vertical and the rubber bolted to them so that it lightly touches the belt, the material tending to hold it tighter against the belt. These strips should be pure gum rubber rather than strips of old belting. They are obtainable for this purpose $\frac{1}{2}$ in. thick and 6 in. to 8 in. wide. The cotton in old belting becomes impregnated with grit so that it becomes a veritable grindstone working on the surface of the belt. Such skirt boards may be hinged so that they may be swung out of the way when not actually in use.

Discharge Chute Details

The discharge chute from a belt should be 4 in. to 6 in. wider than the head pulley or 6 in. to 8 in. wider than the belt between the side plates. This width is required to prevent stones from jamming between the rim of the pulley and the side plates and also to provide ample clearance for the belt if it should run off line. The front plate should be ahead of the pulley sufficient to provide ample space for the material to flow through. In general the front plate should be ahead of the front face of the pulley a distance equal to the width of the belt. However, this distance should not be less than five times the size of the maximum lump. For lumps of 8 in. or more this distance may be reduced. Where space is available this plate may be placed far enough ahead so that the trajectory of the top of the load does not strike it but goes directly into the throat in order to reduce wear.

The height of the side plates need not be higher than the top of the load on the belt, except in case of high speed belts or other conditions where excess "splashing" may occur in the chute. In dusty conditions a cover over the chute and a low hood run back along the belt a short distance has been found to be effective to some extent in suppressing dust. The projection of the sloping bottom plate or vertical back plate should pass through the rim of the pulley



Long skirt plates are a necessary evil when a high speed belt is loaded on a steep incline

at its lowest point. The throat of the chute or the cross section of any vertical chute should be at least five times the size of the maximum lump in its smallest dimension to prevent arching or choking. Its area should be sufficient to provide one square inch for each $1\frac{1}{2}$ tons per hour maximum capacity. Sloping chutes or chutes handling damp material or sand or screenings must be larger. It is well to consider, when fixing these dimensions, the width of the wearing plates and proportion the chute so that these fit it neatly. Approximately $\frac{1}{8}$ in. clearance between wearing plates is satisfactory.

Belts carrying wet material, material sometimes damp, or fine material should be provided with a belt wiper or revolving brush just in back of the discharge chute on the return side before the belt reaches the bend

pulley or the first return roller, and a dribble chute provided under it.

At the tail pulley it is sometimes desirable to have another wiper set at an angle to remove any material being carried back on the belt and prevent it from being crushed between the pulley and the belt. These are not only to protect the belt directly but also to reduce the amount of labor required for general good housekeeping. This is a refinement seldom seen in original designs. Designers seem to feel it is unnecessary or unimportant to the principal function of the conveyor and neglect it for more important details. The operator then installs a makeshift arrangement as best he can under the circumstances, thus marking the job as another installation incomplete in its finer details.

(To be continued)



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Ready Mixed Concrete Association Directors Meeting

PRESIDENT GARVIN PELSUE opened the meeting of the Board of Directors, National Ready Mixed Concrete Association. Executive Secretary V. P. Ahearn summarized the plans for the convention, and pointed to the fine representation the association had of the industry in its membership which was country-wide. Of the total estimated production of possibly 15 million cubic yards of ready mixed concrete in 1942, the production of the association members was about 10 million cubic yards.

Director of Engineering Stanton Walker reported on the activities of the technical committees. It was recommended that there be one Technical Problems Committee with three sub-committees: 1. Truck Mixer Standards; 2. Methods of Weighing and Measurement; 3. Recommended Practices Manual. Mr. Thomson offered a resolution that a "Year Book" be published by the association. It was also suggested that a Fellowship be established by the association and a Foundation be set up for research. The Nominating Committee recommended the reelection of the officers and directors for 1943. Fi-

nances of the association are in excellent condition and the entire indebtedness to the National Sand and Gravel Association has been paid off.

Ohio Meetings

Two very well attended luncheon meetings of the Ohio Sand and Gravel Association and the Ohio Ready Mixed Concrete Association were held on June 27 and 28, respectively, at the Hotel Statler in connection with the meetings of the national associations. W. E. Hole presided at the Ohio Sand and Gravel Association luncheon meeting. Floyd Fuller of Portsmouth introduced the speakers. The Treasurer's Report was read by Mr. Stepanian, Robert Purdy presented the Auditing report, and Secretary Clark read his report. Mr. Clark pointed to the heavy tonnage for defense projects this year, but the 1942 figure was somewhat less than 1941. 1943 highway construction, he said, will be largely access construction to camps and war plants. He referred to legislation to return all the gas tax to highway construction and maintenance purposes. Reference also was made to Ohio Specification 2109 which provides for not less than 20 percent crushed particles in crusher run aggregates. Accident frequency, reported Secretary Clark, has increased in 1942 after showing satisfactory declines for a number of years.

STEPHEN STEPANIAN presided at the Ohio Ready Mixed Concrete Association and introduced the guests at the speakers' table. W. G. Kaiser, manager of the Cement Products Bureau, Portland Cement Association, was the guest speaker. With respect to the immediate market for housing, Mr. Kaiser said that the government housing construction plans for 1943 contemplate the construction of 400,000 family units in war plant areas by July 1. It is believed, however, that this program cannot be completed by July 1, and will be extended into the second half of 1943. Mr. Kaiser expressed the view that this program offered an excellent opportunity for the ready mixed concrete producer to secure a large volume of business pouring concrete floors. Post-war planning indicates an excellent market for concrete. Turning to substitute markets, Mr. Kaiser said that the farm market offered a fine opportunity to build up business for barns, milk houses, hen houses, silos, pig houses, etc. The government has let down the bars for farm construction, using non-critical materials.



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WAR INDUSTRY CONFERENCE



Stearns Joltcrete serves in War as well as in Peace

The Stearns plant, normally devoted exclusively to the manufacture of concrete products plant equipment, is now running 24 hours a day, seven days a week, making tank parts, other armament items and concrete machinery for war purposes.

Stearns Concrete Machinery Is Still Available

If required for producing masonry units for authorized building jobs, we can supply Vibration and Tamp Type Block and Brick Machines, Mixers, and Skip Loaders. We are making such shipments, not only to domestic points, but also to those United Nations needing these machines for production of the war effort.



Future Concrete Markets

Concrete products manufacturers must turn to new fields to take up the anticipated slack in building construction

CONCRETE PRODUCTS manufacturers have been giving considerable thought as to their probable market in 1943. While the \$8,000,000,000 construction awards now in sight for 1943 do not loom up so large as the \$13,000,000,000 figure for 1942, the 1943 figure approaches very closely the 1940 total which was considered a pretty good year. Just how much of a cut of this eight billion dollar market the concrete products manufacturer will get will depend largely on his own energetic efforts, and the national and local associations with which he is identified. However, it is too much to expect the association officers to do all the work; some real pitching will have to be done by every member.

Reports compiled by the Portland Cement Association indicate that sales of concrete block for 1942 totaled about 500,000,000 units which was 15 percent less than in 1941. Building construction fell off rapidly in the second half of 1942 with approximately 63 percent being done in the first half and 37 percent in the last half.

As to the prospects in 1943, the National Housing agency reports that private industry has been asked to

By RALPH S. TORGERSON

build 270,000 family units for which priority ratings are now available. Public construction, both scheduled and still to be appropriated for will include 205,000 family units and 195,000 dormitory and dormitory apartment accommodations.

With the WPB and other government authorities stressing the necessity of using concrete masonry to cut down on scarce lumber building materials, the concrete products industry has a golden opportunity to get a substantial part of this housing business.

Manufacturers who have been getting 250,000, 500,000 and up to 1,000,000 unit contracts for ordnance plants will have to look to other markets to make up for the falling off of this construction, which will be largely completed by the middle of 1943.

Although ordnance construction will be largely completed by the middle of the year, the War Department contract awards announced recently indicate a very substantial volume of airport construction, including hangars, shops, engine test build-

ings, supply depots, barracks, mess halls, and training schools. All these new airports and additions require large quantities of pipe for sewage, drainage and water supply which should offer a continuous market for concrete pipe, at least for 1943. Power houses and central heating plants also must be built. In addition to this construction, a number of hospitals are being built, most of them of permanent types of construction.

War housing for service men and officers' families continues in considerable volume. There are still quite a few industrial areas where war plants are nearing completion which will have to secure additional housing facilities for war workers. In the Chicago area, for example, these large war plants alone it is said will require 70,000 new employees. While some of these employees will come from the area itself, many will be recruited from other distant communities.

The Farm Market

The concrete products industry has been too prone to think of the farm market as "small pickings." There is a tremendous potential market if the industry will only choose to cultivate it. As pointed out by W. G. Kaiser, manager of the Cement Products Bureau, Portland Cement Association, the farm market for block in Wisconsin is about 65 million units. This is based on a survey of new and replacement construction requirements in the State. It is estimated that for hen house construction, four block are required per hen; pig houses need 50 per sow; cow barns require 40 per cow; and milk cooling facilities call for 10 more block per cow. If only half or a third of this market went to concrete block, it would be a very substantial business. It also must be borne in mind that the building limitations for farm structures issued by WPB are not nearly so stringent as for residential construction. If lum-



Walls of this house constructed with concrete masonry units faced with colored aggregates



Garbage receptacle and septic tank which is being made by many concrete products producers

ber and other critical building materials are not used, the farmer can build most any type of structure which might be construed as essential in increasing food production.

After the War Business

If employment is maintained at a fairly high level after the war, catching up on civilian demands which could not be satisfied due to the war program, and also to supply vast quantities of essential materials to rebuild devastated Europe, there will be a big demand for private building construction. The temporary housing erected during the war with its limitations as to size of rooms and lack of customary comfort facilities will not offer much competition for the builder. Many of these structures will be torn down; others will be abandoned when the plants cease operation.

What will be the trend in construction and the types of units? Mass type or dormitory war housing construction is not attractive, and there will probably be an aversion to anything resembling this type of construction in spite of its lower cost per family unit. Homes must have individuality to sell in the after-the-war market. The American public has been conservative as far as home construction has been concerned, and the so-called modernistic types have not had the appeal that many thought they would have.

It is believed that the standard 8-x 8- x 16-in. size will not be popular. A smaller size will probably come into

more general use as it presents a better appearing wall. Too many have associated the large concrete block with industrial construction. The coursed ashlar wall with full height and half height units scored vertically and horizontally may be the answer. It will offer economy in labor costs and will present a better appearance by breaking up wide areas without lines. The double wall of smaller units has much in its favor as far as durability and insulation values, but its labor cost is high. More color must be introduced into concrete masonry either through coloring pigment in the concrete, colored painted walls, or a facing of colored aggregate. Colored concrete brick have been used very effectively to give a very pleasing appearance.

Concrete floor slabs and joist construction will be more generally used than it is today. Concrete roof slabs and concrete roof tile should be more actively promoted. Precast concrete stairs, lintels, mullions, and other specialties should be sold along with the block. In other words, the concrete products manufacturer should be prepared to sell the "concrete house."

Specialties

With the construction market falling off, many concrete products manufacturers have turned to specialties. The October issue of *Rock Products* stressed many of these new products; such as manhole covers and frames, shower bases, oil tanks, milk cooling tank, catch basin grates, concrete

masonry fences, grain bins, concrete fence posts, fish net weights, concrete storage tanks for compressed fuel gas for home use, and reinforced precast concrete bridge slabs. Electrical cable conduit and sectional type concrete conduit to protect steam lines is being used more extensively. In fact, anything employing a comparatively heavy section, which was formerly made of metal and was kept in a fixed location, is now a prospective medium for substitution of concrete. Very large quantities of a special lightweight concrete block have been supplied for the construction of engine testing buildings at army and navy airports. These units, due to their rough surface texture, have been used for their sound-absorbent quality and are generally known as acoustical block. Shipyards have taken a large number of concrete keel blocks as a substitute for scarce timber.

Enough Cement for Civilian Needs

WESTERN PORTLAND CEMENT ASSOCIATION, Denver, Colo., reports that there will be enough portland cement to fill civilian needs in 1943. At times in the last half of 1942 unprecedented military demands took the entire cement output of local mills and civilian requirements could not be met promptly. Government requirements for 1943 are not expected to be as heavy, and the association believes it can fill all contracts for military and civil needs promptly.



Coursed ashlar with full height and half height units scored vertically and horizontally

CONVENTION

Concrete Masonry Takes a New Step

Convention program to emphasize government controls in construction, new uses for standard products and new products to conserve critical materials

STARTING January 1, 1943, the National Concrete Masonry Association took a step in the direction of furnishing a more complete service to its membership which has been found so essential to other industries faced with the many perplexing problems brought about by War and the restrictive regulations which have followed in its wake.

E. W. DIENHART, who has served as assistant secretary of the Association since February, 1938, has resigned as assistant manager of the Cement Products Bureau of the Portland Association to devote all his time to the affairs of the National Concrete Masonry Association. For the present he will maintain headquarters at the P.C.A. offices in Chicago. With the concrete products industry requiring the undivided services of someone closely familiar with its problems to present the case of the industry before Government officials, Mr. Dienhart's qualifications should be of unusual value to the industry.

Mr. Dienhart first entered the concrete construction field in 1915 as a concrete contractor. In 1918 he joined the staff of the Portland Cement Association as a field engineer, and in 1921 became a member of the Cement Products Bureau. After six years with the P.C.A. he was appointed general manager of the Acme Concrete Products and Gravel Co., Cement City, Mich.

At the annual convention of the National Concrete Products Association, held in Milwaukee, January 28, 29, and 30, 1925, Mr. Dienhart was elected a director of that group.

In 1927 he became sales manager, Haydite division, of the Hydraulic Press Brick Co., Cleveland, Ohio. From 1930 to 1932, he was sales manager of the Maul Macotta Corp., Chicago, after which he returned to the Cement Products Bureau of the

P.C.A. On August 1, 1936, Mr. Dienhart was appointed assistant manager of the Cement Products Bureau, P.C.A.

1943 Convention Program

A strictly business program without exhibits will be held by the National Concrete Masonry Association at the Sherman Hotel, Chicago, February 16 and 17.

Program details are not available at this time, but the following outline is given:

Feb. 16—8:30 to 10:00 a.m.—Registration
10:00 a.m. to 12:00 Noon:

Round table discussion of industry problems and their relation to the War Effort.

2:00 p.m. to 5:00 p.m.

The United States Government Viewpoint on the concrete masonry unit industry as an aid to winning the war.

Speakers representing:

War Production Board
Office of Price Administration
Selective Service System
War Manpower Commission
U. S. Army Engineers
Bureau of Yards and Docks, U. S.
Navy
Federal Public Works Agency
Federal Housing Administration

7:00 p.m. to 9:00 p.m.

What concrete masonry unit manufacturers can do to help win the war and also help themselves.

February 17—10:00 a.m.—Business Meeting

Address of President
Changes to By-Laws
Nomination and election of Directors

2:00 p.m. to 4:00 p.m.

New uses for standard products and new products to conserve critical materials.

History of the Association

The present step toward a more permanent organization of the National Concrete Masonry Association serves as an appropriate time to set forth some of the early history of the organization and its predecessors. It was not until 1919, about a year after Mr. Dienhart joined the P.C.A., that a really functioning national association was organized. The first meeting was held February 12 and 13, 1919, with J. K. Harridge, president of Hydro-Stone Co., Chicago, as presi-



E. W. Dienhart, secretary, National Concrete Masonry Association

dent, and W. R. Harris, of the P.C.A. as chairman of the executive committee. The first exhibit was held the following year with W. R. Harris as chairman of the exhibit committee. This exhibit was held under the auspices of the National Conference on Concrete House Construction.

Some of the prominent men who served on the advisory committee of the conference were: B. F. Affleck, of Universal-Atlas Portland Cement Co., who was then president of the P.C.A.; Richard Hardy, Dixie Portland Cement Co., vice-president of P.C.A.; J. K. Harridge, previously mentioned; D. Helmuth, Cleveland, president of the Concrete Roofing Tile Association; Wm. M. Kinney, general manager of the P.C.A.; H. B. Lichtry, Waterloo, Iowa, president of the Concrete Mixer Association; E. Guy Sutton, secretary of the National Sand & Gravel Association; and J. E. Zahn, United States Portland Cement Co., Denver, Colo. In addition to the National Concrete Products Association and the Portland Cement Association, organizations such as the American Concrete Institute, Concrete Block Machinery Association, Concrete Roofing Tile Association, Concrete Mixer Association, Western Association of Laundry Tray Manufacturers Association, the concrete stave silo group, and a larger number of regional concrete products associations were allied with the national associa-

(Continued on page 77)

The Concrete House of the Future

Ketchin Brick and Tile Co. has built a demonstration house to show the interesting possibilities in the use of concrete construction units

"SEEING IS BELIEVING" is an old saying which is being exemplified in the concrete house recently completed by Ketchin Brick & Tile Co., Fort Lauderdale, Fla., for demonstration purposes. While private home construction, except for defense housing jobs, has probably ceased for the duration of the War, M. M. Ketchin, president of the company, has an abiding confidence that when the Government drops the bars on private construction an excellent opportunity will be offered the manufacturer of concrete products to participate in a home construction boom. To keep the market for concrete products alive in the minds of prospective home builders, contractors, and architects, there is no better means than a demonstration house.

Starting with an old two-car garage made of Duntile concrete masonry units, the walls for the living quarters above are constructed with 2½-x 8-x 12-in. concrete tile made on a Dunn brick machine. The units were laid up in the Ideal style, two

stretchers and a binder, making a 12-in. wall with a 7½-in. air space. By placing ventilators on the inside at the floor line and ceiling, circulation is provided throughout the walls. The outside is cement "gun" glazed for waterproofing, and the inside is simply jointed and finished direct with du Ponts Lithopone.

Floors are laid with the company's own concrete stone tile having a Travertine texture. The ceiling is constructed with 3-x 8-in. reinforced concrete joists placed at 24-in. centers over which are laid 24-x 24-in. concrete slabs. On top of the slabs a ¾-in. layer of concrete is poured, and this in turn is covered with 3 in. of white pea size rock. This construction offers good insulation against the hot rays of Florida sunshine.

The cornice was designed to hold water on the roof as a further means of keeping the house cool. For several weeks a 4-in. layer of water was kept on the roof, but it was found that the 3-in. of white rock kept the roof cool and a spout was connected at one



Attractive alcove kitchen showing effective use of concrete masonry units and travertine tile floor

corner to carry off the surplus water. Elimination of the layer of water also did away with the necessity for keeping kerosene rags on the roof to prevent mosquitos from breeding in the water.

It will be noticed that this construction has no furring, lathing or plastering. There is no wood in the construction, except the doors and door jambs. Window frames are of concrete and the sash are of steel.

The built-in bath tub is of concrete having a surfacing of tile with a polished quartz hard top finish in beautiful colors. Slabs from which bath tubs are made are one-inch thick, and are made 36-x 72-in. and cut to the size of tub required. All aggregates are Florida products. The polished

(Continued on page 77)



Left: Living room has exposed masonry walls, concrete joists and slab ceiling, concrete tile fireplace, imitation travertine floor tile.
Right: Bedroom walls of exposed concrete masonry painted a delicate blue



TO THE
CONCRETE
PRODUCTS
INDUSTRY

a Letter from
J. H. BESSER



January 9, 1943

To Members of the Concrete Products Industry:

Addressing this message to you calls first for the most sincere expression of my deepest feelings of admiration and respect for your splendid response to the demand for war construction materials. The large number of you whose ingenuity has been shown in devising new products. The large number of you to conserve critical materials are to be commended in the same high degree.

The present emergency has drawn the individuals comprising the concrete products industry closer together. This teamwork will continue as an invincible power against any odds in the future. Your industry has gone through many trying periods in the past and has always emerged to new heights. Greater improvements have made your industry bigger and better and have given concrete masonry the topmost place as an all purpose masonry material.

It has been an interesting experience to have been actively and constantly working with the concrete products industry for more than forty years. In this period your industry has grown from infancy to its present fully matured state. More and more I like to look forward and think of what the future holds in store for you.

Already there is an unprecedented housing shortage. After Victory is won, no one can doubt that private building will take a big part in helping to bring this country back to industrial prosperity. The use of concrete masonry will greatly increase on recognized merit.

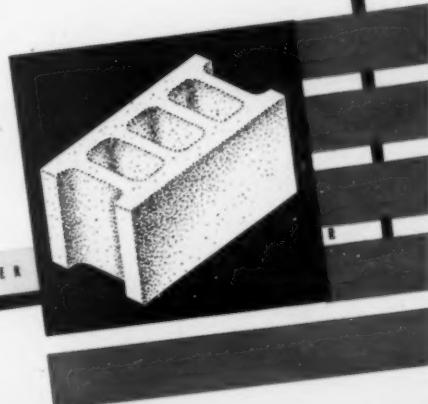
In our own all-out war effort, our personnel, equipment and factory space have all been increased. When the time comes, these improved facilities will be turned over to the manufacture of concrete blocks. I hope that the Besser Manufacturing Company can in this way serve the industry. I hope that the in helping to make it the industry which, due to your individual efforts, it deserves to be.

Sincerely,

BESSER MANUFACTURING COMPANY

By 
J. H. Besser, President

THE SAVING IN PALLET COST WILL PAY FOR ANY BESSER



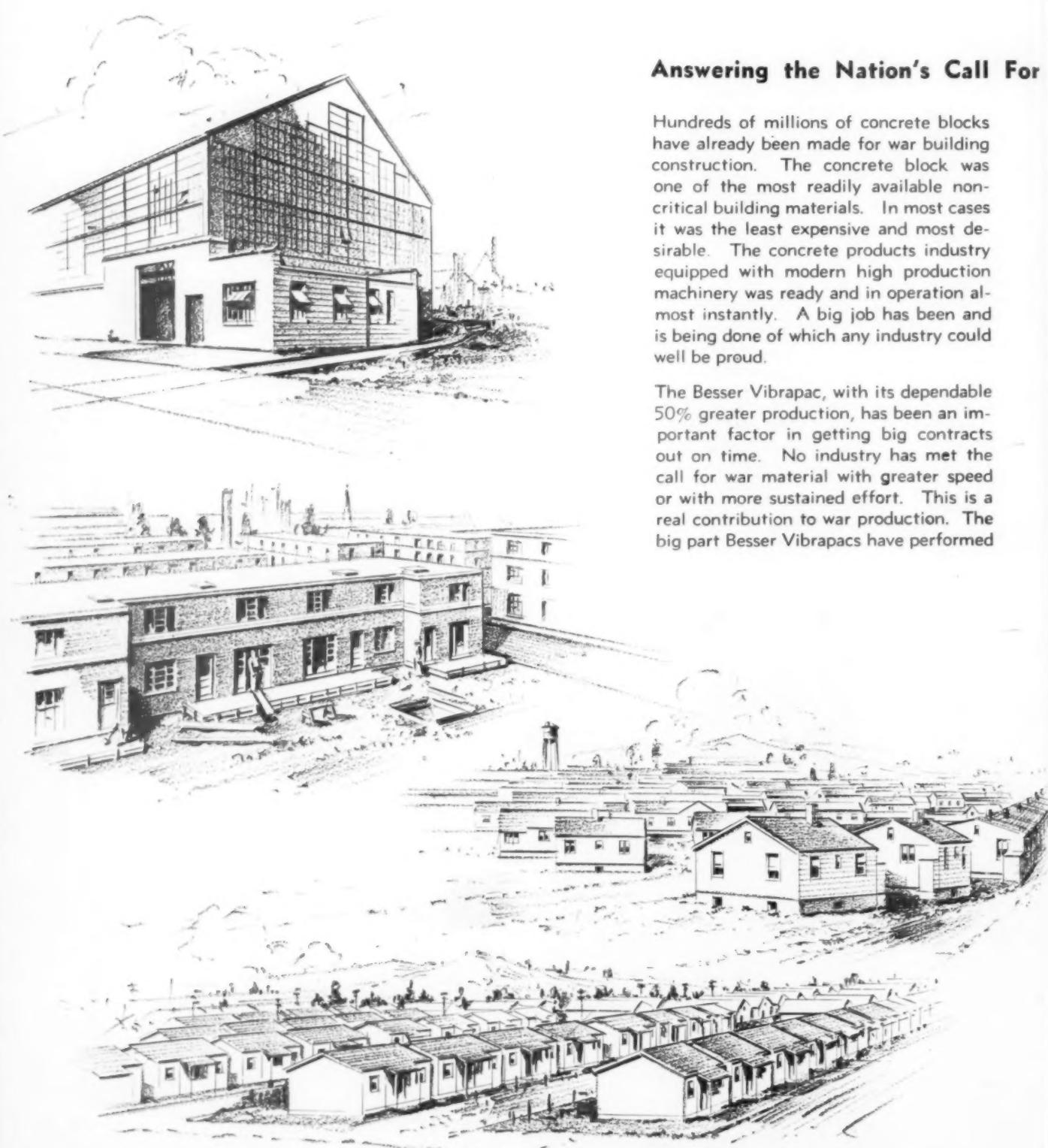
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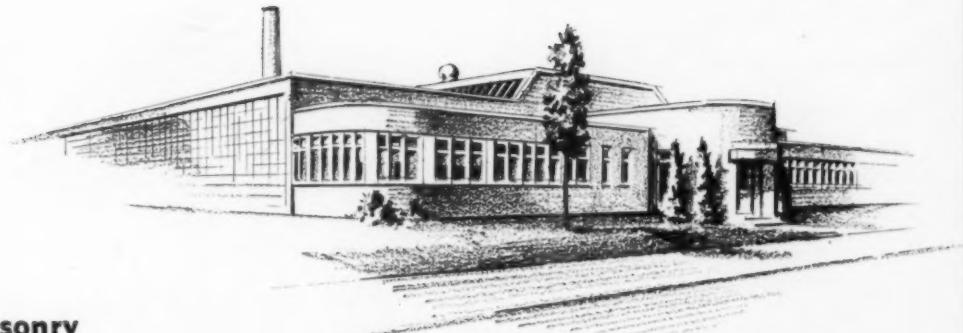
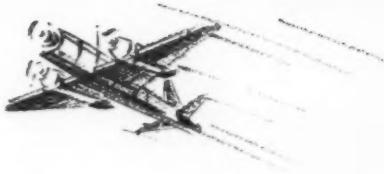
GREAT CONTRIBUTION TO THE WAR EFFORT

Answering the Nation's Call For Prod

Hundreds of millions of concrete blocks have already been made for war building construction. The concrete block was one of the most readily available non-critical building materials. In most cases it was the least expensive and most desirable. The concrete products industry equipped with modern high production machinery was ready and in operation almost instantly. A big job has been and is being done of which any industry could well be proud.

The Besser Vibrapac, with its dependable 50% greater production, has been an important factor in getting big contracts out on time. No industry has met the call for war material with greater speed or with more sustained effort. This is a real contribution to war production. The big part Besser Vibrapacs have performed



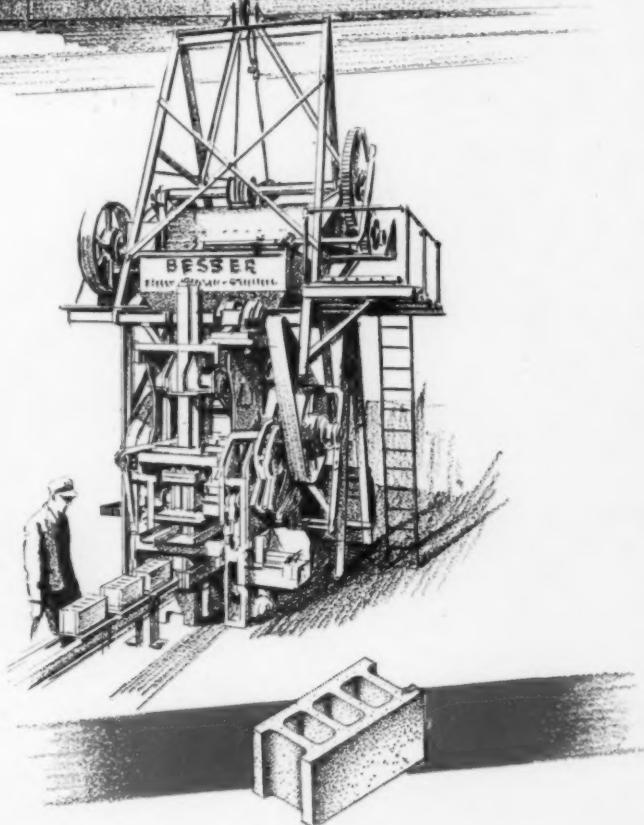
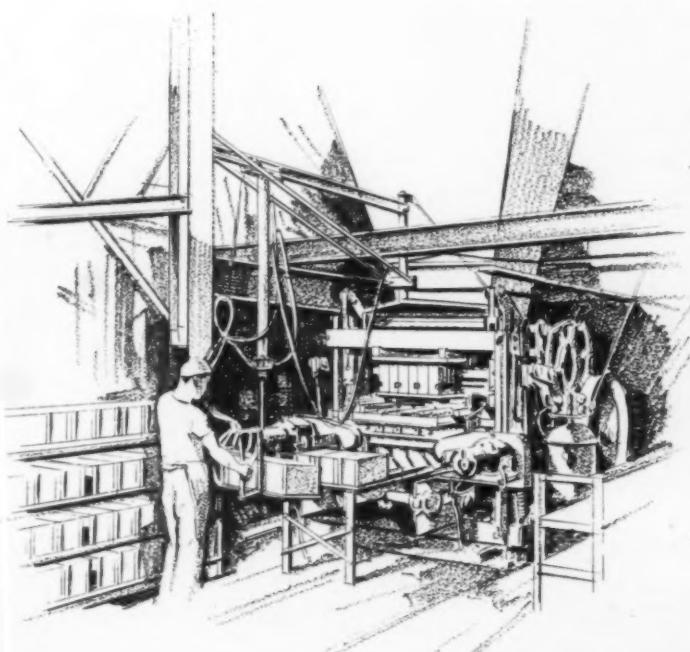
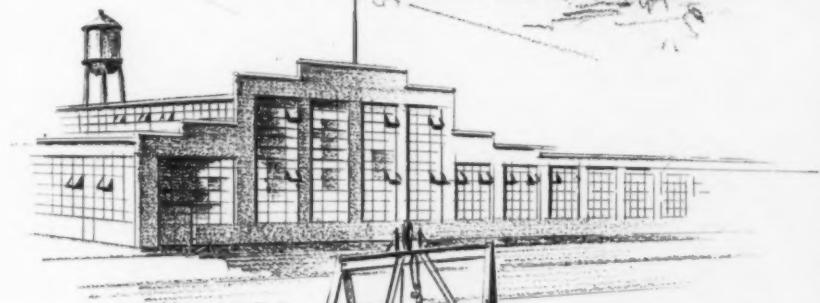


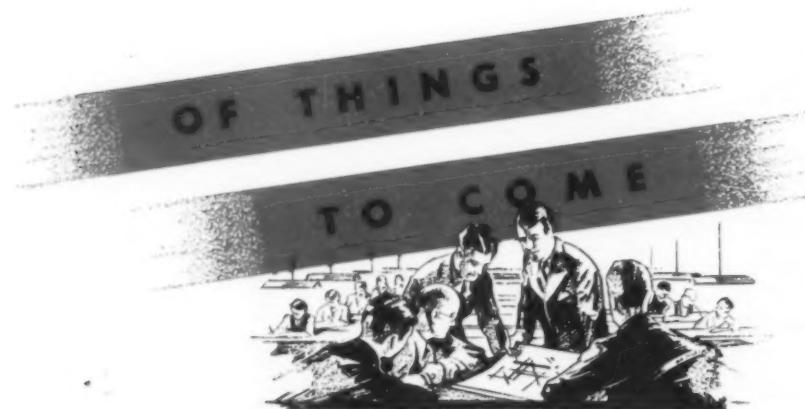
or Production of Concrete Masonry

is gratifying to the Besser Manufacturing Company as well as to Vibrapac owners.

This widespread and diversified use of concrete blocks in war building construction will have a tremendous influence in after-the-war building. Government approval will increase and accelerate popular acceptance of concrete masonry as the universal building material.

Manufacturers have learned many new ways to improve their methods and to improve their product. There have been difficulties in this speeding up of production and running double and triple shifts in many plants. As a result the industry as a whole will become a bigger and a better industry to be engaged in, and concrete masonry will have won a position of unquestioned value and desirability in all building construction.





The manufacture of concrete masonry units for use in war building construction has been classed as an essential industry. Consequently the Besser Manufacturing Company has in addition to direct government war contract work continued to produce and service Besser block machines for government building construction.

This constant contact with the industry during one of its most trying periods has given our organization much new experience that will put them in a much stronger position when the war ends and conditions in the industry are again on a more normal basis.

Our experience in manufacturing war materials for the government is providing valuable training for our engineering and production forces. This war production is also providing new and additional experience and training for our skilled factory force.

When the enlarged Besser factory with its better equipment and facilities is again devoted entirely to making concrete products machinery, it will be manned by a force whose experiences have been broadened and who have been educated and trained to meet the more progressive era which will follow the winning of the war.

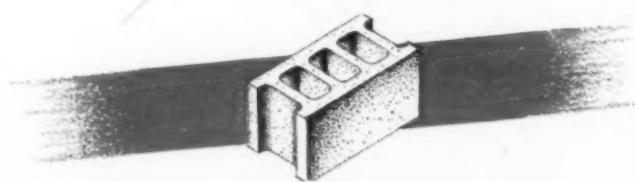
When this time comes the Besser Manufacturing Company will be in position to produce the improved and more efficient big production machines that the new, more advanced concrete products industry will demand.

BESSER MANUFACTURING COMPANY

Main Office and Factory

ALPENA

MICHIGAN



MERCHANDISING



Bathroom equipped with built-in concrete tub faced with special concrete tile. Floor is of concrete tile

(Continued from page 72)

surface is equal in density and hardness to granite.

Wall tile are made $\frac{1}{4}$ -in thick and the floor tile are $\frac{5}{8}$ -in. thick laid on a concrete base. In the "all-concrete" house, the tile are cemented direct to walls or partitions. In wood houses, wire lath is first installed, then plastered with concrete, and finally faced with the tile.

Color is used throughout in the interior decorative scheme. Floors, walls, and ceiling are all in different color

combinations. For example, the bathroom tub and walls are of a mottled yellow combination with the trimmings and the lavatory and toilet bowls in green. In the kitchen, the floor is Travertine, the grill work is yellow and blue, and the walls are light green. The bedroom walls are of light blue and the floor is a mottled yellow.

Convention

(Continued from page 71)
tion. Most of these local groups have long since passed out of the picture.

The first officers included: President, J. K. Harridge, Chicago; vice-presidents, Geo. W. De Met, Chicago; H. L. Fisher, Wheaton; Robt. Havlik, Mooseheart, Ill.; F. A. Hoer, Pueblo, Colo.; F. J. Kinzinger, Windsor, Ont.; F. C. Parks, Deer Park, Wash.; N. J. Peterson, Omaha, Nebr.; A. E. Potter, Middletown, Conn.; W. A. Rogers, Cleveland, Ohio; J. A. Ross, Chicago; W. A. Scott, Seattle, Wash.; E. L. Stephani, Chicago; W. B. Trost, Waterloo, Iowa; and W. D. Wolfe, San Jose, Calif. W. R. Harris was chairman of the executive committee.

In 1919, about 50 million concrete masonry units were produced annually, mostly in small plants having two or three hand tamping machines. There was no merchandising of the product. The total number of plants was in the neighborhood of 5000. In 1919 only a few of the plants produced more than 100,000 block per plant; today many are producing more than 1,000,000 units annually.

There was little opposition to con-

crete block from manufacturers of competitive materials until nearly 200 million block annually were produced. From that point on the industry has had an incessant battle from competitive industries that resorted in many cases to political interference through restrictive city ordinances and state regulations. In spite of this opposition, the industry has grown rapidly until today its production is over 500 million units.

Cinder concrete block production was only 25,000 in 1919; in 1926 it had jumped to 70 million units, and in 1942 this lightweight block represents a substantial percentage of the total. Other lightweight aggregates which have increased in popular favor include Haydite, Waylite, Superock, and Pottscro. The National Cinder Concrete Products Association has its own officers and committees to deal with problems which are peculiar to its own product and has held a separate annual meeting in the summer months until the past year. However, this group has maintained close affiliations with the parent organization, the National Concrete Masonry Association.

Concrete Block "Fences"

In the Concrete Products Section of the October issue of *Rock Products* mention was made of the use of concrete blocks for fences around war industry plants. Apparently the government at first did not approve concrete walls or fences for this purpose, because no provisions were made in the design to see through them. This objection has been overcome in the designs developed by the Portland Cement Association, and several of these concrete block fences, involving large quantities of masonry units, have been built. In one design, openings are provided in the wall by the use of chimney block placed at regular intervals. In another design, two 4-in. openings are provided for in laying a course of masonry units with an 8-in. unit in between to allow for the usual 16-in. unit.

Pavement Yardage

AWARDS of concrete pavement for December, 1942, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During December, 1942
Roads	1,488,442
Streets and Alleys	1,171,252
Airports	5,074,454
Total	7,734,148



Living quarters of concrete house built above two-car garage. All construction is of concrete except the steel window sash

Build More Efficient Block Plant

Worrall Bros. new plant has a combination steam coil and vapor system for curing rooms

WORRAL BROTHERS might be termed pioneers in the manufacture of concrete products, having started their business back in the days when there was no such thing as automatic tamper or vibrating machines such as we have today.

They started their business some 38 years ago at 44th and Bank streets, Louisville, Ky. As the years rolled by, residential building grew to the sat-

By WALTER B. LENHART

uration point in the area in which they were located and then shifted across the city to a point so far from their plant that the trucking distances became too long for economy. In 1941 they purchased in the new area a 7-acre tract at Hubbard Lane and the Louisville & Nashville Rail-

road, St. Matthews, Louisville, Ky., and have built and newly equipped one of the most modern products plants in the country. This plant is approximately seven miles east of the center of Louisville.

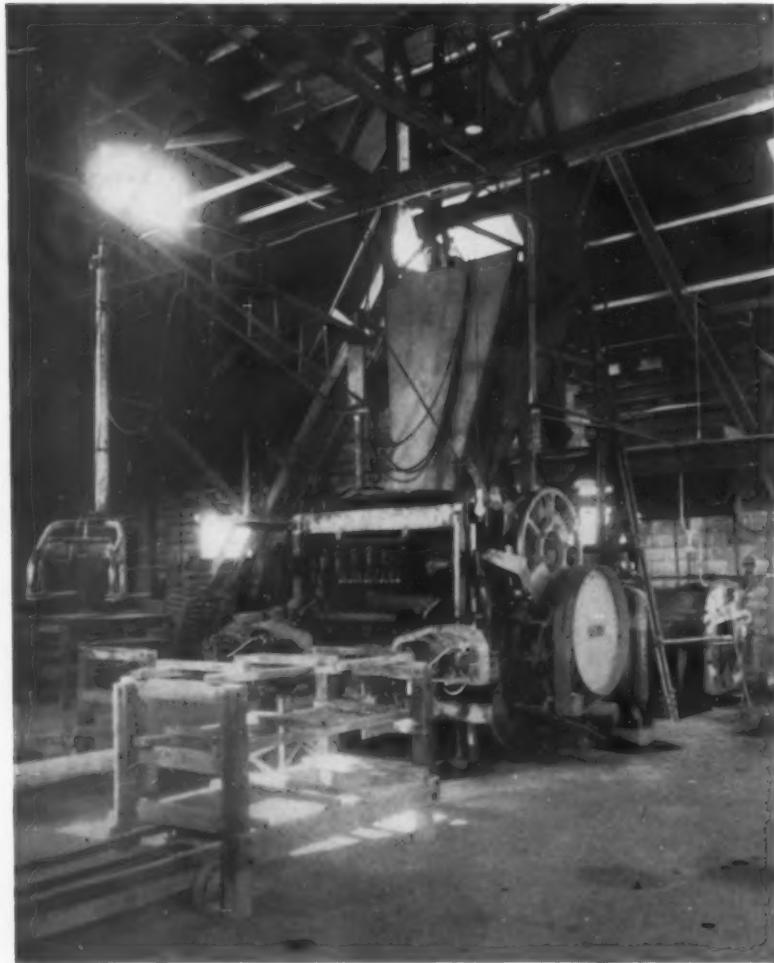
Ideas gained from years of experience were incorporated in the new set-up. The new building is 150 x 175 ft. and production facilities, curing rooms, machine shop and office are all housed under the same roof, with suitable partitions.

The office is built of lightweight aggregate blocks and is a well designed room 30 x 30 ft. Interior office walls are scored, painted and blended with a three-tone oil paint that gives this commodious room a very striking appearance.

The aggregates are delivered to a track hopper via L & N rails, and by truck. A short belt conveyor delivers the material to a bucket elevator that elevates to one of four steel storage bins. There are four bins; for sand, pea gravel, stone screenings and lightweight aggregate, Haydite. Bins have a total capacity of about 2½ carloads. The bucket elevator and chutes serving the bins are all of steel. Chutes have suitable butterfly gates for control of flow with the control being all done from the ground floor.

From the steel storage bins the aggregate is drawn into a weigh lorry immediately under the bin. Here the different aggregates are weighed and discharged to a 30-cu. ft. Besser mixer. This mixer is driven by a 20-hp. Robbins and Meyers motor through a Texrope drive. The pulley shaft runs 200 r.p.m. Just alongside this mixer is a No. 609 New Holland jaw rock crusher for crushing defective blocks and machine cleanings. This aggregate is salvaged and remixed. A 5-hp. General Electric motor drives the crusher through Browning grip-belts.

Blocks are now made on the latest type of Besser plain pallet stripper vibrating equipment. The machine has a capacity of from 10 to 20



Large capacity concrete block machine has pneumatic off-bearer and magnetic brakes for stripper



New concrete products plant of Worrall Bros. is an attractive advertisement for the company as well as an efficient layout

blocks per minute, depending on the size of block being manufactured.

A novel feature of the block plant is the use of a mixer on the same floor (and at same elevation) as the block machine, with the mixed concrete elevated to the block machine's feed hopper by an electric-driven skip hoist. This arrangement permits the immediate return to the mixer of any defective blocks without elevating them. They are simply dumped into the mixer while still green and re-mixed and passed to the block machine again.

Unusual Steam Curing System

A second feature is a new method of using steam to cure the block. There are four curing rooms, each 16 x 70 ft., with concrete roof supported by concrete joists of their own manufacture. On the floor on both sides of each curing room are long metal troughs about the length of the room. These troughs are 10 in. wide and a foot high, and kept filled with water by means of a float valve. Above these troughs, and fastened to the wall, are steam coils of 1 1/4-in. pipe, about the same length as the rooms. The upper part of this coil simply heats the room but the bottom sections of the steam coils are immersed in the metal tank and boil the water, vaporizing it. This trough of hot water not only serves to heat the curing room but also furnishes the necessary moisture. The coil has about enough heating capacity to vaporize the water capacity of the tanks in about ten hours. Steam is supplied by a coal-fired Peerless furnace that also heats the office and other buildings.

A third feature is the use of a concrete floor, 200 x 200 ft. under the entire outside storage space so that after the blocks are steam-cured, the racks can be lifted by one of four Lewis and Sheppard jack lifts and hauled to the storage yard for further

curing. The blocks are not wet artificially after the steam curing treatment.

Manufacture

A normal operating crew consists of four men; one mixer operator, one stripping and piling pallets on the back of the machine, one off-bearing from the machine and one pulling the racks into the steam curing room. In the yard and for other work are usually four to six additional men.

To remove the blocks from the stripper machine a small Curtis air hoist mounted on a swinging boom

which can crawl laterally on the boom is used. Air for the hoist is supplied by a 3 1/2 x 3 1/2 in. compressor.

For the manufacture of lintels and concrete joists there are two vibrating tables each 26 ft. long. These are of steel construction and were made in the company's shop.

The concrete for the vibrating tables is mixed in a smaller Besser mixer driven by a 5-hp. motor. The method of handling the wet concrete in this department is still in the construction stages. For cutting lintels, blocks, etc., a carborundum wheel is used.

Worrall Brothers have six trucks of their own in service; one Ford and five Internationals. All of these trucks were originally 1 1/2-ton capacity but some of them have been rebuilt in the company's shop providing them with ten wheels so that these rebuilt trucks can handle 500 blocks per load or roughly, ten tons per truck.

M. M. Worrall is president of the company; Roy R. Worrall is vice-president; Marion Worrall is secretary and treasurer, and Charles Herrmann is plant superintendent.



Above: Ample yard storage of a complete line of concrete masonry units. Runways are paved with concrete. Below: Steam curing rooms equipped with special system of vapor curing are convenient to block machine

Design Acoustic Block

THE GEIST COAL & SUPPLY CO., Cleveland, was called upon last summer to furnish concrete masonry units of some unusual qualities. The blocks were for use in the Engine Testing Laboratory of the National Advisory Committee for Aeronautics (N.A.C.A.). They wanted blocks with exceptionally high acoustical values, higher even than generally accepted acoustical materials; blocks with full structural strength; lightweight; furthermore they wanted them in large quantities and they wanted them in a hurry.

Herb Geist, president of the company, and Walt Schaefer of Hydraulic-Press Brick Co., working with the engineers and technicians of the two companies, came up with some workable ideas quick. Various samples were produced, tested, approved, and production in quantity was started.

For its qualities of sound absorption, which met the requirements of the N.A.C.A., the new block was named No-Eco. The Engine Test Laboratory order called for double corner blocks in the standard 12- x 8- x 16, 8- x 8- x 16, 6- x 8- x 16 and 4- x 8- x 16-in. dimensions, and their corresponding halves. The

blocks are manufactured on a Besser Vibrapac with carefully graded Haydite aggregate and closely controlled mix.

Since the development of No-Eco, an additional market has been found for use in factories and buildings where sound and vibration are a major problem.

Shut Down South Dakota Cement Plant

THE SOUTH DAKOTA CEMENT COMMISSION reported that the state-owned cement plant will be shut down for a two-month overhaul period. The Commission reported gross sales totalling \$2,124,944 for 687,500 bbl. of cement, and a net profit of \$470,571.

Some agitation exists in the State to sell the plant. Legislators are now investigating the cement company accounts with the object of introducing legislation to liquidate the enterprise. Earnings are reported to have been sufficient to retire the bonded indebtedness, but the trend has been for the State to divest itself of all business enterprises. Several losses were encountered in the operation of other publicly-owned enterprises.

Ready Mixed Concrete Plants

A BEAUTIFULLY ILLUSTRATED BOOKLET has been published by Butler Bin Co., Waukesha, Wis., showing numerous installations and drawings of various types of plants. The 44 pages contain descriptions of the plants and interesting operating data.

Fix Cement Price

A MAXIMUM PRICE of \$1.43 per bbl. in bulk, f.o.b. the mill, has been set for cement in the States of California, Arizona, and Nevada, according to news reports. To this price must be added freight, packaging, and other normal charges. Dealers' margins are limited to those existing between October 1, 1941, and March 31, 1942.

Purchase Block Plant

THE WASHINGTON BRICK CO. has purchased the S. R. Edmunds Co., concrete block plant at Washington, D. C. Thomas Somerville, Muirkirk, Md., will have charge of operations. Thomas K. Zevely is superintendent.

Cement Plant Fire

NORTH AMERICAN CEMENT CORPORATION'S cement plant at Howes Cave, N. Y., suffered a heavy fire loss recently. The cement mill building was largely destroyed, and considerable damage was done to machinery.



**For Ready-Mixed
or Concrete Blocks
a BUTLER Plant
Will Solve
Your Problems**



For several years the trend in the concrete industry has been toward larger, more efficient plants. The backyard producer can no longer compete with the better equipped and well organized firm. The answer, of course, is more yards of concrete, more building units, per man hour with

Butler time saving equipment.

More than twenty years' experience have equipped the Butler engineer to solve any plant problem with the greatest efficiency and the lowest cost. Call on us, without obligation, for consultation on your problems. And write for literature today.

BUTLER BIN COMPANY

• **WAUKESHA WISCONSIN**

YOUR GOVERNMENT
KNOWS A GOOD BRICK-
MACHINE WHEN THEY SEE IT

Jackson Brick machines are continuous in operation. They fill one pocket, compress one brick and remove one all at the same time. They produce up to 28,000 concrete bricks in an eight-hour day. They eliminate the need of costly pallets.

Uncle Sam is, today, our only new machine customer. But for information about used units available, write to

JACKSON & CHURCH COMPANY
SAGINAW, MICHIGAN



MULTIPLEX CONCRETE
MACHINERY COMPANY

ELMORE
OHIO

YOU CAN

help farmers
increase food production!



Concrete masonry milk houses and concrete cooling tanks help dairy farmers meet Army sanitation requirements and the most rigid milk codes.

Concrete all-weather feeding floors save feed and labor, help produce healthier, faster growing hogs and cattle.



A HUGUE VOLUME of construction is needed by farmers in their war effort to produce more food. These busy, short-handed farmers *need builders*—and contractors in every farming region can render a real wartime service in this field.

Concrete contractors and products manufacturers can help the farmers do their war job—by calling attention to the availability of concrete masonry units and other concrete materials. Being widely available with minimum transportation, concrete materials are ideal for many needed farm improvements. Reinforcing steel is seldom required.

Write today for free literature giving practical details of needed farm building possible under war conditions.

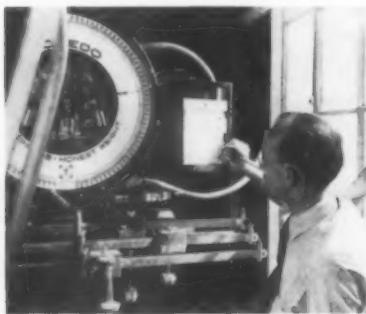
PORTLAND CEMENT ASSOCIATION
Dept. A2-45, 33 W. Grand Ave., Chicago, Ill.

BUY WAR SAVINGS STAMPS AND BONDS

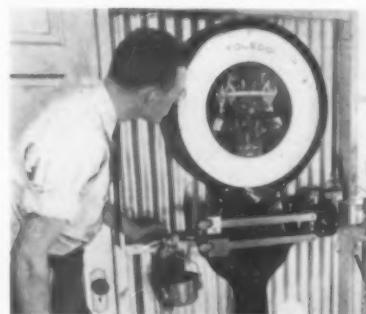
[SC]² PRECISION CONCRETE CONTROL

Received very favorable endorsement at the NRMCA Convention. (Reported in this issue.)

[SC]² Control definitely improves concrete quality and reduces its cost, all without expensive investment in new equipment. It saves the cement that has to be added to provide for expected variation in the W/C Ratio, most of which is unavoidable under ordinary batching methods. Guarantees delivery of the correct quantities of all ingredients, including cement, by making a graphic record of all weighing operations.



The [SC]² Moisture Meter. The only unit capable of determining moisture content in less than 1 minute.



The [SC]² Compensator which compensates for the moisture content in every ingredient and graphically records its every operation.

[SC]² Precision Concrete Control definitely improves concrete quality and definitely reduces cost. Write for our booklet "Profits in Concrete" and let us show what [SC]² can do in your plant.

Scientific Concrete Service Corporation

McLACHLEN BUILDING
WASHINGTON, D. C.

No Steel for Burial Vaults

CONCRETE burial vault manufacturers will not be able to secure new steel molds since the War Production Board issued its restraining order No. L-64 which prohibits the use of any steel to be used in the manufacture of burial vault molds. There is a possibility of manufacturing Concrete Rough Boxes on home-made wood molds.

SYDNEY L. SCHULTZ of the Wilbert W. Haase Co., Inc., advises that W.P.B. Order L-64 limited and finally stopped the use of metal reinforcement in concrete burial vaults. It is said that W.P.B. will lift the ban for about 60 to 90 days to allow concrete vault manufacturers to use up stocks of reinforcement on hand. Up to February 1, however, W.P.B. had not issued any official order on this. Indications are that this release will come on or about February 15, 1943. The Portland Cement Association, working with concrete burial vault manufacturers, has made tests to show that concrete burial vaults may be made without any reinforcement which will meet the ordinary strength requirements. Concrete Information Bulletin CP 60, describing the manufacture of vaults without reinforcement and the tests that have been made, can be obtained by addressing a request to the Portland Cement Association, 33 West Grand Avenue, Chicago, Ill.

Haydite Changes Ownership

THE HAYDITE CORPORATION, Kansas City, Mo., manufacturer and licensor of Haydite, lightweight aggregate, recently became a division of the Carter-Waters Corporation, Kansas City. Mrs. Dan Survey, whose husband was president of the Haydite Corporation, will retain an interest in the company.

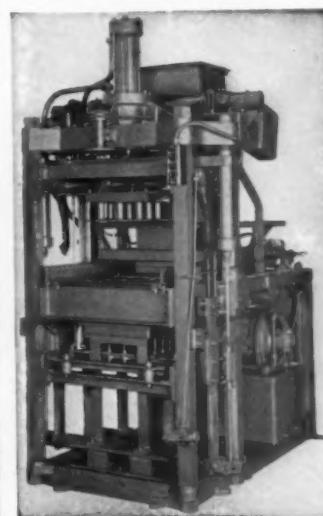
Pipe Company Expands

THE WASHINGTON CONCRETE AND PIPE Co. has purchased land at Moses Lake, Wash., where a plant will be located for the manufacture of concrete pipe to be used for an air field and later will be available to make pipe for the Grand Coulee irrigation system.

Pipe Concern Buys Plant Site

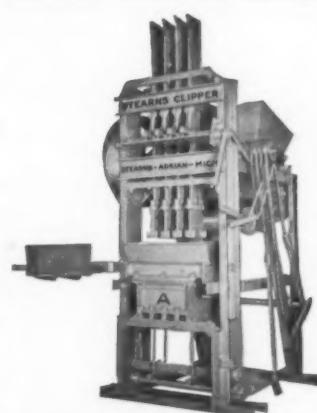
UNIVERSAL CONCRETE PIPE Co. has purchased a tract of land in San Antonio, Texas, fronting on South Trinity street. A plant probably will be erected in the near future.

HYDRAULIC VIBRA-PRESS



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO



"ANCHOR"

Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Hobbs power strippers, Stearns Jolcrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mch. Co.
G. M. Friel, Mgr. Columbus, O.

ROCK PRODUCTS

NEW EQUIPMENT

Tool Bits for Tough Steel

BLACK DRILL CO., Cleveland, Ohio, has brought out a line of tool bits for machining hard, tough steels and the copper or aluminum alloys. A con-



Two $\frac{3}{8}$ -in. tool bits, ground as fly cutters to remove metal from both sides of the hole as the work revolves, mounted in boring bar to cut $2\frac{1}{4}$ -in. hole in nickel chromium steel links for conveyor chain

siderable number of the machine shops in the rock products industry are now making ordnance and other equipment needed in the war effort, and others have been doing more repair and production for their own use since Pearl Harbor and therefore are interested in new developments of this kind.

Known by the trade name, Hard-steel, the tool bits are said to be admirably suited for lathes, boring mills, shapers, and planers, working on hard or tough steels, such as the 4100 series, the high chrome, high nickel and high speed tool steels. As the tool bits are of solid steel, they can be reground on an ordinary wheel time after time. The tool bits are made square and round from $\frac{1}{8}$ in. up in all the usual sizes.

Motor Finder

ALLIS - CHALMERS MANUFACTURING CO., Milwaukee, Wis., is now offering what has been termed a "motor finder" slide rule for quickly selecting the various types of squirrel-cage motors.

With this slide rule, the motor user is able to match the conditions under which the motor must operate at the proposed installation with the required motor characteristics and instantly learn the right motor type and its features. With the "motor finder" only three simple steps are necessary to pick a motor. There are over 30 standard types, covering

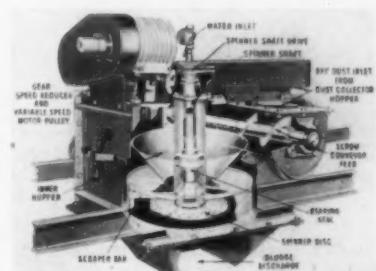
a range in horsepower from $\frac{1}{2}$ to 75 included in the company's Lo-Maintenance line of squirrel-cage motors.

The "motor finder" slide rule consists of two discs or wheels. To find the right motor, the left wheel is turned until the arrow points at the condition where motor will operate; the right wheel is turned until the arrow points to the characteristics which the motor must have; on the opposite side may be found the right motor type which is shown in three windows brought into view.

Mixing Dust with Slurry

AMERICAN FOUNDRY EQUIPMENT CO., Mishawaka, Ind., has added a screw conveyor feed to its so-called American Wet Disposal Unit to provide a constant and uniform rate of feed of discharged dust from dust collectors into the sludge forming device.

As shown in the illustration, this unit is designed to make a wet sludge



Cut-away illustration of mixing equipment designed to mix dust collector discharges with a liquid

by centrifugally mixing the accumulated dust with water or other liquids, such as slurry. It is said that as this union is accomplished almost instantly there is no possibility for the dust to disperse into the atmosphere.

Dust which falls from the dust collector hopper through a flexible coupling is deposited directly into the screw conveyor of the wet disposal unit.

Steel Cable Conveyor

GOODYEAR TIRE & RUBBER CO., has developed a new type of conveyor belt with steel cable cords instead of the customary cotton cords. Steel cable carcasses for conveyor belts were adapted from a previous Goodyear development, in flat transmission and V-belts. One of these so-called steel-carcass belts is in use at the

Oliver Iron Mining Co., Duluth, where it is used for handling the flow of iron ore from the mines. One continuous belt now does the work formerly requiring three belts.

Anti-Freeze Contains Non-Critical Materials

GREAT NORTHERN CHEMICAL CO., INC., Oak Park, Ill., has developed an anti-freeze product for the radiators of automotive vehicles which is said to contain no critical materials. Known under the trade-mark of "No-Freeze", the manufacturer claims that it affords insurance against freezing down to 35 deg. below zero, and against evaporation from boiling as the boiling point is 324 deg. F.

Cut-Off Blade for Concrete Block

FELKER MANUFACTURING CO., Torrance, Calif., has announced a diamond abrasive cut-off blade, known as the Di-Met Rimlock. This blade is said to be particularly efficient in cutting concrete block, and concrete specimens. This diamond abrasive blade incorporates a special bonding process in which the diamonds are locked rigidly in the rim of the wheel without crushing and with the claimed benefits of longer life and considerably faster cutting ability. The Rimlock blade is available in two types: a hard steel bond that makes an exceptionally stiff and fast cutting blade, and in a copper bond which, though not quite so fast or stiff as the steel, operates with a softer action and some increase in life.



Circular cut-off blade in which diamond cutting medium is imbedded by special process

Gas Restrictions Curtail Cement

CEMENT production has been sharply curtailed in Kansas, western Missouri, and Oklahoma by a War Production Board Limitation Order L-31, issued by the Allocation Section of the Power Division. The order was effective January 18. An earlier order was cancelled after protests. The earlier order prohibited the use of gas entirely, but after additional hearings in Washington and Kansas City, it was decided to cut two-thirds of the gas supply of each company. The order is effective only until April 1.

The Universal Atlas Cement Co., Independence, Kans., plant has high priority war orders. It will convert partly to the use of fuel oil enabling 75 percent production. Lehigh Portland Cement Co., Iola, Kans., will shut down three of its five kilns. Monarch Cement Co., Humboldt, Kans., can operate at 50 percent capacity with coal and fuel oil on hand. Three of its kilns can be operated with coal for fuel.

Axis Phosphate Supply Cut Off

CONTROL of North Africa by the United Nation's forces has cut off Germany from most of the phosphate fertilizers on which it has depended for crops, said Robert R. Cole, vice-president of Monsanto Chemical Co., in a recent address. Germany is heavily dependent on fertilizers to keep her overworked farm lands producing, and it is reported she is up against severe shortages, especially of phosphates. So-called French phosphates have been mainly processed African raw materials.

Sand for Flood Protection

PORTSMOUTH SAND & GRAVEL Co., Portsmouth, Ohio, furnished 300 tons of sand to the city to fill 15,000 bags which were used for flood protection. Flood walls and the bags prevented any flood damage to the city. The sand will be emptied from the bags and stored for another emergency. Bags will be dried out and stored.

Phosphate Price Ceilings

ORDER M 240 of the OPA fixes ceiling prices for miners of Florida rock and Tennessee brown rock of various grades and fineness of grinding, but these ceilings do not apply to sellers other than miners or to either blue or white rock from Tennessee or the Western or other deposits. These ceilings constitute some sharp advances and in some no advance, the



fixers evidently not appreciating the difference between long and short tons. Apparently the March, 1942 maximum billings still constitute ceilings for sellers of ground rock who are not miners.

Wage Increase

WAR LABOR BOARD ordered portland cement manufacturers in southern California to pay 3c an hour increase to equalize a 15 percent increase in living costs between January 1941 and May 1942. The W.L.B. turned down a claim of the C.I.O. Cement Workers' Union for exclusive bargaining rights for employes of Monolith Portland Cement Co. plant at Tehachapi.

Producing Sugar Rock

ABOUT 40 carloads of crushed limestone have been taken out of the new quarry at Arco, Idaho, operated by Alton L. Braithwaite and his father, Robert F. Braithwaite. The quarry is furnishing "sugar rock" to the Utah-Idaho Sugar Co.

Change Ownership

THE CUYAHOGA SAND & GRAVEL Co., Cleveland, Ohio, recently changed ownership. J. M. Truby's interests have been acquired by L. A. Wells. A. Artner, operating manager for the past 20 years, will continue in this capacity.

Busy on Airports

THE KILLINS GRAVEL Co., Ann Arbor, Mich., reports a heavy demand for sand and gravel for the numerous defense projects. A new airport and an addition to another has required nearly 250,000 cu. yd. Aggregates also are being furnished for 56 acres of concrete to be used for plane parking at a bomber plant.

Scrap Old Lime Kilns

LEHIGH PORTLAND CEMENT Co. is scrapping its old lime plant at Mitchell, Ind., built in 1915 and abandoned in 1936. The scrap is going to war industries.

Exempt Mine Machinery From Oil Cut

MINING MACHINERY has been exempted by the Petroleum Administration for War from the January 18 order cutting industrial oil rations in 17 Eastern States by 40 percent.

Bonus to Employes

SEVERAL cement companies have given their employes substantial bonuses. Employes of the Oklahoma Portland Cement Co. received a bonus representing 10 percent of their annual earnings. The Dewey Portland Cement Co., Bartlesville, Okla., paid out \$14,500 as a 1942 bonus.

Start Up Quarry

TOBIN QUARRIES, INC., Kansas City, Mo., has opened the Helmick quarry near Council Grove, Kans., according to George Flynn, engineer. Diesel power units will be used. Shovels and other equipment are being transferred from the Kanopolis dam job.

May Open Quarry

E. C. SCHROEDER Co., Madill, Okla., contractor in charge of ripraping and fill operations at the new Washita River bridge, contemplates opening a limestone quarry in Marshall county, according to W. G. Reichmuller, superintendent.

Cement Production

BUREAU OF MINES reports that the portland cement industry in December, 1942, produced 14,090,000 bbl., shipped 8,923,000 bbl., and had in stock at the end of the month 17,401,000 bbl. Production and shipments of portland cement in December, 1942, showed an increase of 2.0 percent and a decrease of 22.5 percent, respectively, as compared with December, 1941. Portland cement stocks at mills were 14.5 percent lower than a year ago. Preliminary totals of production and shipments for 1942 showed increases, respectively, of 11.4 and 10.6 percent from the final totals for 1941.

In the following statement of relation of production to capacity the total output of finished cement is compared with the estimated capacity of 153 plants at the close of December, 1942, and of 157 plants at the close of December, 1941.

	RATIO (PERCENT) OF PRODUCTION TO CAPACITY				
	December	Nov.	Oct.	Sept.	
1941	1942	1942	1942	1942	
The month..	65.0	67.0	80.0	87.0	87.0
12 months..	65.0	74.0	74.0	73.0	73.0

ROCK PRODUCTS

Buys Land

BUCKEYE SAND & SUPPLY CO., Wheeling, W. Va., has purchased the former Carnegie mill site of about 21 acres. News reports state that the land will probably be used for a new industry.

Fire at Lime Plant

GREENTOWN LIME CO., Greentown, Ohio, reported a fire which caused considerable damage. Apparently the fire started in the power house.

No Bidders

STATE HIGHWAY stretch of 12.47 miles in Idaho needs crushed gravel surfacing. First call, no bids, second call, no "acceptable" bids, third call, no report on as yet.

Sand-Lime Brick Production and Shipments

FOUR active sand-lime block and brick plants reported for December and six for November, statistics for which were published in January, 1943.

AVERAGE PRICE FOR DECEMBER

	Plant Delivered Price	Price
Detroit, Mich.	16.00	
Saginaw, Mich.	13.00	
Grand Rapids, Mich.	15.00	
Seattle, Wash.	16.50	18.50

STATISTICS FOR NOVEMBER AND DECEMBER

	*Nov.	**Dec.
Production	1,415,000	728,000
Shipments (rail)		60,000
Shipments (truck)	1,016,230	483,825
Stock on Hand	882,994	655,280
Unfilled Orders	395,000	1,550,000

*Six plants reporting: incomplete, one not reporting stock on hand and two not reporting unfilled orders.

**Four plants reporting: incomplete, one not reporting stock on hand and two not reporting unfilled orders.

COMING CONVENTIONS

American Concrete Institute, Palmer House, Chicago, Ill., February 17, 1943. Directors' meeting.

American Concrete Pipe Association, Drake Hotel, Chicago, Ill., February 17 and 18.

National Concrete Masonry Association, Sherman Hotel, Chicago, Ill., February 16 and 17, 1943.

Sand-Lime Brick Association, Sherman Hotel, Chicago, Ill., February 16 and 17, 1943.



A BANTAM *that's both* a "BEAR" and a "BIRD"

A "bear" for work, and a "bird" for profits

...that's what sand and gravel producers say

about this bantam-size Morris Hydraulic Dredge. This 30-ft. dredge will accommodate a 6-in. dredging pump with driver and all accessories . . . it is portable and can be transported overland . . . used at a number of successive locations. If you have a small sand and gravel deposit, ask about this Morris bantam dredge . . . complete information on request.

MORRIS MACHINE WORKS



BALDWINSVILLE
NEW YORK

CENTRIFUGAL PUMPS

Taxation Problems

(Continued from page 46)

lieu of bonds. Net loss also can be used to level off excess profits. A provision offering relief is the amendment to Section 722. This relief can be obtained to take deductions for a disaster such as fires or flood, a depression cycle out of line with general business, and sporadic periods of production. Application for relief must be filed with the Bureau of Internal Revenue within six months of March 15. The ruling has been made retroactive to 1940 and 1941 incomes if made before April 21, 1943.

WILLIAM E. HOLE of American Aggregates Corporation, also discussed the Act, and the 5 per cent Victory tax.

There is a lot of misconception regarding the tax, Mr. Hole said. It applies to all income and not merely to payrolls. At present, the 5 percent on income other than wage and salary is collected at the end of the year.

Most of the rest of his talk had to do with a new method of figuring the special income tax credit for mining operations, to take care of excessive depletion in the past year or two. This is too involved to discuss here.

but will be explained in a later issue.

Mr. Ahearn discussed the liability of sand, gravel and ready-mixed concrete producers for social security tax on the payments to independent motor truck owner-contractors, hired to supplement the producers' own trucks. The internal revenue bureau of the U. S. Treasury Department says these are employes of the producer, and he is responsible for their social security tax collection. On the other hand, the Treasury has ruled that in the collection of the 3 percent transportation tax, these same truckers are independent contractors. A case involving the collection of social security tax is now before the Federal District Court at Toledo, Ohio.

The 3 percent transportation tax must be collected by the contract trucker. When the producer makes deliveries with his own trucks there is no tax. Where producers have pooled their trucking facilities, in order to serve large jobs expeditiously, the situation becomes complicated. If merely the trucks are leased there is no transportation tax involved; but if the drivers go with the trucks, then the transportation tax is collectible. The only way out, as it now stands, is to transfer the drivers temporarily, to the lessee's payroll. Since the arrangement is sometimes only for a day or two, one can readily imagine the complications involved.

[Since the above was written a notice has been received from Mr. Ahearn that the Internal Revenue Bureau of the Treasury Department has reversed its ruling that owner-drivers of trucks hired by producers are engaged in the transportation of property for hire, and made a new ruling which jibes with the previous ruling on collection of the social security tax. The way the issue stands now is that if the industry wins its social security tax case it will have to pay the 3 percent transportation tax; if it loses, it will have to pay social security tax but not the 3 percent transportation tax. Some producers, at least, prefer the latter.]

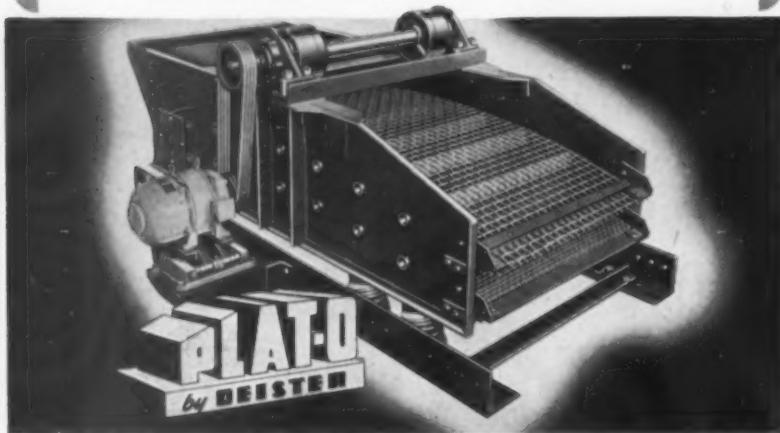
Peak Production with PLAT-O

FROM coast to coast you will find experienced operators keeping ahead of today's emergency grading schedules with PLAT-O Vibrating Screens. The ease and dependability with which these sturdy, all steel welded screens handle every size and type of aggregate under the most adverse and variable operating conditions means higher production . . . increased profits . . . year after year of trouble-free service.

PLAT-O'S capacity is greater because its unusually high speed vibrating mechanism and fast conveying action, grade rapidly and accurately . . . move oversize off quickly . . . prevent accumulation of excessive loads and thick beds.

Most sizes are available for prompt shipment to eligible purchasers. Write, wire or phone . . .

DEISTER MACHINE CO., Fort Wayne, Ind.



Operating Problems

(Continued from page 47)

suitable for both loose and dense mixtures. Asked about the place of portable-plant mixtures, he said he thought plant mixes would be used on all important highways in the future (rather than mixed in place mixes) but he could see no difference between permanent plant mixtures and portable plant mixtures. Mr. Allen agreed with him that plant mixtures would prevail over road mixes. Mr. Walker summarized the discussion by calling the producers' attention to the fact that specifications for gravel mixtures should be designed for gravel and not for competitive materials, as frequently happens.

Progress in overcoming the stripping of aggregates used in bituminous mixtures was discussed at some length. The two methods of approach are: (1) treatment of aggregates; (2) treatment of asphalt. Eventually, probably special asphalts will be available. Heating the aggregates is about the best way of avoiding stripping in most instances. The rest of the discussion had to do with the unreliability of the present soundness tests for aggregates.

Sand and Gravel Association Directors Meeting

AT THE DIRECTORS MEETING of the National Sand and Gravel Association on Tuesday, January 26, President Otto Conrades presided. The program of the convention was briefly reviewed, and the Nominating Committee presented its report, recommending the reelection of the officers and directors.

Executive Secretary V. P. Ahearn gave a very encouraging report on the excellent gains made in membership which he said was representative of every section of the country and embraced by far the largest percentage of the industry's production.

Irwin F. Deister, chairman of the Manufacturers Division, reported on the activities of the Division. He expressed complete satisfaction of the manufacturers for the convention plans and the cooperation which he had received.

Director of Engineering Stanton Walker reported on research activities and arrangements with the University of Maryland. He said that the activities had been hampered by manpower difficulties, but it was planned to continue the work with the help of part-time services of trained students.

300-Ton Barges of Graded Gravel Loaded in Average Operating Time of 75 Minutes with 10-Inch Amsco Counterflow Pump

T. L. Herbert & Sons of Nashville, Tennessee, in January, 1942 commissioned the dredge "HERBERT" as the latest addition to their river fleet. It is a 10-inch pump size, hydraulic dredge for excavation of sand and gravel, equipped with a rotary cutter ladder, spuds, and a complete screening installation for classifying aggregates. It is powered by a direct-coupled diesel-electric generator set, producing direct current of 230 volts for all units, which are individually operated by electric motors. The hull, super-structure, ladder and rigging frames are all of steel construction. Complete crew quarters are provided. The dredge is not self-propelling, but is moved and attended by a tug.

For production, a 10" Amsco, Type "H-CF," Form 40 Heavy Duty Dredge Pump is used, "Counterflow" water-seal construction, right-hand top discharge, 12" suction, having two-direction ball thrust bearing, impeller with threaded bore, and all-welded steel base. It is directly connected to a 150 H.P. motor.

The pump water end parts, including shell, impeller and side plates, all pipe line fittings and the rotary cutter, are Amsco designed and made of impact and abrasion resistant austenitic manganese steel, "The Toughest Steel Known."

The dredge "HERBERT" is now digging at Johnsonville on the Tennessee River and is loading her 300-ton barges in an average operating

time of about 75 minutes. This is graded gravel and does not count the sand excavated, most of which is thrown back. The pump performance rate averages around 30 per cent solids steadily, a tribute to excellent operating management.



"Dependable and Economical"—words descriptive of Amsco hydraulic dredge equipment, are the usual terms of recommendation from numerous users.

In the gigantic national emergency construction program, hundreds of sand and gravel producers operating Amsco pumps, when called upon for continuous, highest production, have, like T. L. Herbert & Sons, responded in a spectacular manner.

A bulletin is available, completely describing Amsco Dredge Pumps, rotary cutterheads, and pipe line fittings.



Amsco
AMERICAN MANGANESE STEEL DIVISION
* Chicago Heights, Illinois

FOUNDRIES AT CHICAGO HEIGHTS, ILL.; NEW CASTLE, DEL.; DENVER, COLOR.; OAKLAND, CALIF.; LOS ANGELES, CALIF.; ST. LOUIS, MO.
OFFICES IN PRINCIPAL CITIES

THE AMERICAN
Brake Shoe
AND FOUNDRY COMPANY



FINANCIAL NOTES

RECENT DIVIDENDS

Alpha Portland Cement Co.	\$.25	Mar. 25
Pacific Portland Cement Co. 6½% pfd. (p100) (arrears)	1.00	Jan. 29
Lehigh Portland Cement Co.	.37½	Feb. 1
Lehigh Portland Cement Co. pfd.	1.00	Apr. 1
Schumacher Wall Board Corp. Com. (np)	.20	Feb. 15
Standard Silica Corp. Com. (pl)	.15	Feb. 15
Ohio River Sand Co. 7% pfd. (p100) (arrears)	1.75	Mar. 1

CORONET PHOSPHATE CO., New York, N. Y., had a net income of \$71,416 for the year ended December 31, 1942, as against \$191,456 for a similar period ended December 31, 1941.

WOLVERINE PORTLAND CEMENT CO., Coldwater, Mich., reported a net income of \$71,833, after charges but before taxes, for the twelve months ended December 31, 1942. This com-

pares with \$57,751 for a like period a year ago.

LONE STAR CEMENT CORPORATION, New York, N. Y., presented the following consolidated earnings statements:

3 Mos. to Dec. 31:	1942	1941
Sales	\$ 8,468,645	\$ 8,381,191
Mfg., etc., costs.	4,698,457	4,464,504
Sell. expense, etc.	813,588	947,264
Depreciation & depletion	496,924	496,276
Operating profit	2,459,676	2,473,147
Other income	72,845	86,103
Total income	2,532,521	2,559,250
Fed. taxes, etc.	1,628,988	1,265,256
'Misc. charges	cr 247,450	97,817
Net profit	1,150,983	1,196,177
Earned per share	\$1.21	\$1.26
12 Mos. to Dec. 31:		
Sales	\$34,928,328	\$30,779,087
Mfg., etc., costs.	19,047,902	16,553,518
Selling experience, etc.	3,042,528	3,055,404
Depreciation & depletion	2,263,012	2,455,462
Operating profit	10,574,886	8,714,703
Other income	352,753	394,338
Total income	10,927,639	9,109,041
Inc. & prof. tax	5,781,000	3,525,000
Other taxes	969,650	769,255
'Misc. charges	744,754	710,250
Net profit	3,432,235	4,104,535
Earned per share	\$3.62	\$4.33
No. of shares	948,597	948,597

¹ Includes provisions for doubtful accounts and contingencies.

² After post-war refund.

³ Subject to audit and adjustment.

Note: Results of foreign subsidiaries included above are figured at average exchange rates except as to provision for depreciation and depletion which is based on the dollar value of fixed assets at time of acquisition.

FOR recovering suspended materials from gases, no other mechanical collector can match the advantages of the MULTICLONE. It is the result of over 36 years of concentrated research and development in the science of recovery and incorporates many exclusive advancements that reduce installation costs, increase operating efficiency, save valuable space and greatly simplify maintenance and inspection.

FOR EXAMPLE... the patented vane design of MULTICLONE tubes eliminates need for the complicated manifolding and costly multiple ducts of conventional side-entry cyclones. This important advancement permits any number of tubes to be compactly installed in small areas, using only ONE inlet and ONE outlet header. In addition, the particles removed by an entire bank of tubes are collected through one unitized hopper, further simplifying installation and operation over the conventional multiple hopper arrangement.

Advantages are many. The smaller surface exposed to the gas minimizes erosive wear, and because all tubes can be quickly reached through a single manhole, maintenance is easy and quick without dismantling entire unit. • Heat radiation is reduced to a minimum by the simplified header construction, improving temperature control and reducing costs of insulation. • The great saving of space permits MULTICLONE installation in existing structures where manifolding would be impossible—and in all new structures where space is valuable.

These are only a few of the many engineered advantages that are yours when you install a MULTICLONE. It will pay you to get the full story before you install any dust recovery equipment!



SEND FOR BULLETIN containing detailed information and specifications on MULTICLONE construction.

WESTERN Precipitation
CORPORATION

Engineers, Designers
and Manufacturers of
Equipment for Collection
of Suspended Materials
from Gases and Liquids

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New York: Chrysler Bldg. • Chicago: 140 S. Dearborn St.
San Francisco: Hobart Building

PRECIPITATION COMPANY OF CANADA, LTD. • DOMINION SQUARE BUILDING, MONTREAL

CANADA CEMENT CO., LTD., Montreal, Que., Canada, has issued the following consolidated income account for the years ended November 30:

	1942	1941
Oper. profit	\$6,146,683	\$5,827,349
Depreciation	1,825,000	1,750,000
Directors' fees, etc.	101,892	102,718
Balance	4,219,791	3,974,631
Inc. from invest.	41,519	32,012
Total income	4,261,310	4,006,643
Bond interest	442,284	442,283
Mortgage interest	21,300	23,300
Pension fund	100,000
Bd. refund exp.	110,000	110,000
Inc. & prof. tax	2,322,000	1,800,000
Exc. prof. tax ref.	cr 147,000
Net income	1,412,727	1,631,060
Preference divs.	1,004,345	1,305,649
Surplus for year	408,382	325,411
Prev. surplus	3,232,401	2,906,990
Surplus, 11-30	3,640,782	3,232,401
'Times int. earn.	8.74	8.37
Earn., pref. share.	\$7.03	\$8.12
Earn., com. sh.	0.18	0.54
No. of pref. shares	200,869	200,869
No. of com. shares	600,000	600,000

¹ Disregarding preferred arrears.

² Before income and profits taxes.

BELLROSE SAND CO., INC., Ottawa, Ill., will be dissolved as a corporation and will operate as a partnership with Thomas H. Bellrose and his son Vernon K. Bellrose as owners.

ROCK PRODUCTS

Many Sizes for New York

(Continued from page 40)

conveyors are provided for loading barges direct from the plant bins and stockpiles. One long tunnel belt conveyor leads toward the dock and extends underneath the entire plant, for direct withdrawal of asphalt sand, dry-screened asphalt or brick sand and from any of the plant bins. This conveyor is on 350-ft. centers, 36-in. width, and terminates at a rescreening station which is also a transfer point. A 36-in. cross conveyor, 160-ft. centers, under the wet sand stockpile transfers to the main tunnel belt conveyor when loading out that product. Draw-off gates are spaced 10-ft. apart under the stockpiles.

At the end of the main tunnel conveyor, gravel is passed over a 4- x 14-ft. Tyler single-deck rinsing screen with $\frac{1}{8}$ - x $\frac{3}{4}$ -in. slotted openings and transfers to the dock belt conveyor. Any product can be diverted at the screen and put into a truck-loading bin by a 30-in. belt conveyor. The bin is a Nicholson circular concrete block bin holding 600 cu. yd. in four compartments. Local trade is served from this bin.

A 36-in. belt conveyor, 650-ft. centers, carries material out to the dock. The belt travels at 500 f.p.m. and will load barges at the rate of 1000 tons in 40 minutes. It first terminates at a short conveyor where a Merrick Weightometer weighs and records the tonnage being loaded. Barges are spotted and shifted around by an electric-powered, 2-drum American cable hoist.

There are 90 barges, holding from 500 cu. yd. to 750 cu. yd. each. Four towboats are in service, powered by Fairbanks-Morse Diesel engines. Their sizes are 660, 360, 240 and 160 horsepower. As many as 10 bargeloads are towed at once to destinations and tied up for distribution to customers with retail facilities along the coast, or to contractors. All material towed in barges is sold wholesale, and delivered to Connecticut and New Jersey points as well as into metropolitan New York.

Production began in the new plant in June, 1942. The old plant, which had still greater capacity, stopped operating in July and will eventually be torn down. Metropolitan Sand and Gravel Corp. also operates another plant, at Northport, Long Island, that produces 400 t.p.h. It is also a bank operation. The plant at Northport is also being modernized.

W. A. Atkins is president of the concern. Mr. Freyhof, who previously was operating manager for two plants of the American Aggregates Corp. at

Indianapolis, Ind., has remained at Port Washington as operating manager for both plants. B. J. Thompson is superintendent at Port Washington and R. E. Allen is chief engineer and purchasing agent. Jean Boylston is sales manager.

Cleveland Ready Mix Concern Expands Operations

THE CLEVELAND BUILDERS SUPPLY Co., Cleveland, Ohio, recently added their fourteenth batching plant in this area. Four Blaw-Knox bins were set up, two of which were aggregates bins of 200- and 150-ton capacity and two were cement bins of 500- and 300-bbl. capacity. This company recently established a record of fur-

nishing 1976 cu. yd. of concrete in about a 12-hour period to one big war job.

Marquette Has Been Busy

MARQUETTE CEMENT MANUFACTURING Co., Cape Girardeau, Mo., has been extremely busy for the past year, largely on war contracts. Cement plant operations have been maintained around the clock for the entire year. Output of crushed stone was doubled.

To Add Crusher

PACIFIC SILICA Co., Deer Park, Wash., has plans to increase crushing capacity to meet heavy war-time demands. An expenditure of \$90,000 is contemplated.

Use Genuine WILFLEY TABLES for WET GRAVITY CONCENTRATION *TO SAVE NON-METALLIC MINERALS



Which One OF THESE FOUR USES FITS YOUR NEED?

1. Before or after flotation for recovery of coarse mineral not readily susceptible to flotation.
2. For separations (or grading up) from previous table concentration or from original table feed.
3. For concentrating low grade feeds to produce high grade concentrate for chemical treatment and tailings.
4. For concentrating a middlings feed producing a high grade concentrate and a middlings for re-grinding.

Send for BULLETIN 64-B

Other Mine & Smelter Products:

Marcy Ball, Rod & Tube Mills; Rock Bit Grinders & Not Millers; Pinch Valves; Belt Feeders; Density Controllers; LABORATORY EQUIPMENT & SUPPLIES; MINE & MILL SUPPLIES; COMPLETE MILLING PLANTS.



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SALT LAKE CITY
EL PASO
SAN FRANCISCO
NEW YORK CITY

The
Mine & Smelter
Supply Co.



CANADIAN
VICKERS, LTD.
MONTREAL
W. R. JUDSON
SANTIAGO, LIMA

Truck Tire Care

(Continued from page 49)

fect of speed on tread wear. On passenger cars the effect of speed is to double wear with each 15-mile increase in speed. Slides also showed the effect of overloading and under-loading tires, effect of temperature, curves, etc. Wear on tires is substantially greater in hot weather which called for caution in loading, speed, and curves. Mr. Evans recommended the practice of rotating tires regularly and also proper mating of new and old tires. The condition of rims and bearings is an important con-

sideration in tire wear, he said, and running tires in oil and grease should be avoided as tires deteriorate rapidly under such conditions. Another point to watch is wheel alignment.

War Trials of an Order Clerk

This very amusing skit has been repeated in new form for several years at conventions of the National Ready Mixed Concrete Association until it has become a regular feature. H. F. THOMSON and A. S. BUTTERWORTH, General Material Co., are its authors. At the 1943 convention, the various characters put on wigs and changed their voices somewhat to

give a more humorous note to the characterizations. Characters in the playlet represented the order clerk, a woman ordering a small amount of concrete, a government inspector, a contractor on government work, a supplier of truck parts, and a batching plant superintendent.

Safety Awards

DANIEL HARRINGTON, chief Health and Safety Service, U. S. Bureau of Mines, made the award of Rock Products safety trophies to the two winners of the 1941 contest—the Chelsea lake plant, Memphis, Tenn., of the Missouri Portland Cement Co., and the Columbus, Ohio, plant of the American Aggregates Corp. Thirty-six other plants which had no accident records will be sent certificates of merit. These plants were listed in Rock Products, December, 1942, p. 110.

Mr. Harrington, in his presentation speech, discussed the expansion of the Bureau of Mines activities to cover welfare work. Included in his remarks was quite a lengthy explanation of the reason for the proposed new quarry code of safe practices, although no details of the code were mentioned.

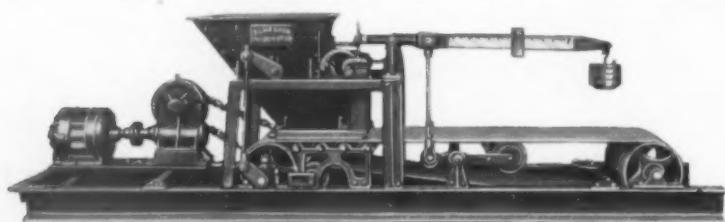
P. N. BUSHNELL, Missouri Portland Cement Co., St. Louis, Mo., accepted his company's trophy, with an address which gave an interesting history of accident prevention work at the Memphis sand and gravel plant. He attributed their success to strict physical examinations, including X-ray, of every employee; and holding superintendents and safety supervisors, strictly accountable for accidents. R. S. EVANS, American Aggregates Corp., Detroit, Mich., accepted the trophy won by his company's Columbus plant.

Car Supply

W. J. McGARRY, manager, Ore and Coal Exchange, which takes care of open-top car supplies for shippers said in effect that 1943 conditions were unpredictable; that one could only plan and hope. Most of his address was devoted to telling what a splendid job the railways did in 1942.

Erratum

On page 56 of the article, Particle Size Distribution, by H. E. Schweyer, an error occurred in the captions describing the stirring apparatus used in making the tests. Fig. 2 should refer to the use of the stirring apparatus for large amounts of material, whereas Fig. 2A was designed for small samples.



When you think WEIGHING— Think POIDOMETER

The name "Schaffer Poidometer" has become the standard for weighing and proportioning raw and finished materials. For twenty-five years Poidometers have stood at the top for performance, reliabil-

ity, accuracy and sturdiness.

It is the most accurate and durable weighing and feeding machine on the market. Buy Poidometer and you buy assured production.

GOOD EQUIPMENT Deserves GOOD CARE

To the vast number of Poidometer users we bring this message: It will more than pay you to keep your machines up to the pink of condition. Check every part of your

Schaffer Poidometer. Any part that shows wear or needs replacing should be ordered now. Your Poidometer will serve you best if you keep it in top condition.

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Crushed Stone Directors Hold Annual Meeting

THE 26th annual convention of the National Crushed Stone Association having been indefinitely postponed in deference to the general request by Joseph B. Eastman, director, Office of Defense Transportation, addressed to all industrial associations, the directors of the Association met in Cincinnati, Ohio, January 26 and 27 to attend to the corporate business of the Association.

A considerable part of the time was devoted to a discussion of the action of the board in deferring the annual convention. Although the special convention committee and the board might have acted otherwise, had they had the benefit of Mr. Eastman's subsequent thoughts on the subject of industrial association meetings, the board felt that it had acted in the only way it could have done, when it accepted Mr. Eastman's request literally and in good faith.

All officers were reelected and the financial report of the Association showed it was in fine condition.

The rest of the meeting was devoted to hearing the reports of the engineering director, A. T. Goldbeck, and the administrative director, J. R. Boyd.

Directors Present

The following directors were present: W. M. Andrews (president of the Association and chairman of the board), New Castle, Penn.; G. A. Austin, Decatur, Ga.; W. P. Beinhorn, Minneapolis, Minn.; L. J. Boxley, Roanoke, Va.; A. J. Cayia, Gulliver, Mich.; T. C. Cooke, Swampscott, Mass.; J. Harper Fulkerson (representing the Manufacturers' Division), Carbondale, Penn.; Otho M. Graves, Easton, Penn.; T. Ward Havely, Lexington, Ky.; R. P. Immel, Knoxville, Tenn.; J. D. Lane, Raleigh, N. C.; Paul M. Nauman, Dubuque, Ia.; H. E. Rainer, Buffalo, N. Y.; Russell Rarey, Columbus, Ohio; J. A. Rigg, Fort Spring, W. Va.; H. E. Rodes, Nashville, Tenn.; Dan Sanborn, Kankakee, Ill.; L. W. Shugg (representing the Manufacturers' Division), Schenectady, N. Y.; Stirling Tomkins, New York City; D. L. Williams, Ripplemead, Va.; W. F. Wise, Dallas, Tex.; A. L. Worthen, New Haven, Conn.

Open New Quarry

ELLISON LIMESTONE PRODUCTS CO., Sylvia, Kans., has started tunneling under the highway to gain access to

a new quarry on the other side. Two parallel tunnels, 18 x 18 ft. in cross section will be bored through to the other side to permit trucks to pass back and forth from the new quarry to the crushing plant. In addition to Ray Ellison, owner, and Charles Dunn, superintendent, Charles W. Armpriester from New Jersey will assist in the management of the plant.

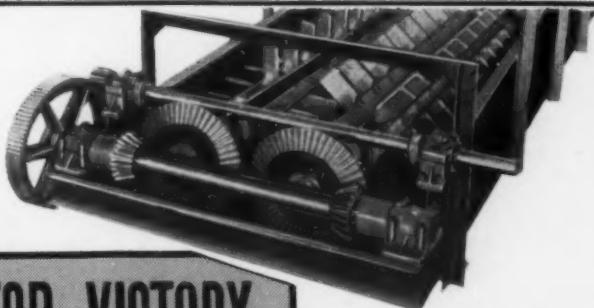
Fertilizers Going Up

ANNOUNCEMENT has been made by the OPA that present prices on fertilizer, frozen at February 16-20, 1942 levels, will probably be raised by approximately 7 percent to cover increased costs of nitrogen materials and transportation.

Silica for Ferro-Silicon

J. H. HELM, Mariposa, Calif., is reported to have opened a silica deposit on his ranch at White Rock and is shipping the output to Permanente Corp., magnesium plant in California, presumably to make ferro-silicon.

Keep Working for VICTORY Keep Buying WAR BONDS



Production of high grade aggregates is important. Maintaining maximum output and efficiency with your EAGLE Equipment is just as important. Your high priority rating makes it possible for you to get necessary repairs, parts and replacements.

Although 95% in War Production, we are able to supply you with EAGLE interchangeable parts, maintenance and engineering service.

Call on us for parts, repairs, help of any kind to keep your EAGLE Equipment producing at top speed.

**EAGLE
IRON WORKS**
DES MOINES, IOWA

Foundry Sands

(Continued from page 57)

are transferred to freighters that travel through the western canal to Buffalo for delivery to Great Lakes ports. Barges of sand are hauled to Albany Port for transfer to steamers for shipment to the West Coast and South America.

As important as the Albany deposits are to the company, its holdings and operations in New Jersey are just as extensive. The deposits are different, and bonded as well as unbonded sands and gravels are produced. New Jersey sands are of sub-surface deposits on

the coastal plain. The materials were transported by streams from the retreating ice sheet and the land sank to form the Delaware estuary. Deposits from 25 to 35 ft. deep, covered with 4 ft. of overburden, are being excavated. Power equipment, including dredges can be used in deposits of that extent.

The Whitehead New Jersey properties from which bonded sands are procured extend from South Amboy, Middlesex County in the north to Dorchester in the south. Amboy molding sand, fire sand and fire clay are produced in northern New Jersey. Amboy molding sand is used for

molds or cores in iron, alloys and non-ferrous castings. In the Lumberton district, south of Trenton and east of Philadelphia, a molding sand of medium coarse grades is produced for molds or cores in iron and non-ferrous work where extra heavy green strength is required.

In South Jersey, in the Dorchester-Millville area, many unbonded sands are produced as well as bonded gravels and sands. New Jersey bonded sands are used widely for medium and heavy castings.

Amboy molding sands are produced by blending various sands of different degrees of bonding strength and grain size to fit a particular application. The mill at South Amboy is equipped with millers and a large screen to blend and combine the various materials. Several products of different grain size are produced. Amboy molding sands produce castings that clean easily and have smooth faces. Both the grain and bonding material are highly refractory. Clay contents for the different grades are 12, 15, 20 or 25 percent. Dorchester gravel is used in molds or cores for large, heavy castings. The quartz grains are sub-angular, with a high sintering point and permeability. It is used for casting any metal. Four large Whitehead screening and blending plants are in operation in this district.

Dorchester molding sand is produced for medium and heavy castings, for iron and high-temperature alloys. It is said this district produces the only naturally bonded sand in the United States that is used for steel castings. The grains are classed as sub-angular and are 99 percent SiO_2 , with unusually high green and dry strength. Twenty-four different grades are produced, in four large blending and screening plants.

A characteristic of the Lumberton molding sands is that when used to make cores, the bond is largely destroyed in the sand adjacent to the metal, thus facilitating removal of the core. It is sold as "fine" or "coarse," in grain size, or as "medium" or "strong" in bond.

Occasional New Jersey deposits of finer sand are also being exploited for light and medium castings. Jersey fire clays, high in refractory qualities, are mined in Middlesex county and processed into a number of grades as a bond for molding sand. Jersey fire sand, a sharp unwashed sand is produced for use with Jersey fire clay, for facing and for core sand mixes.

At Dividing Creek, in southern New Jersey (Continued on page 94)



Perhaps the curtailment of rubber has put your plant on the "spot." You've got to do something about the problem of material handling. It is possible that track haulage is the answer. If so, investigate Plymouth Locomotives for their versatility, dependability and low initial cost. Plymouths have a record behind them . . . a record for low cost operation, minimum upkeep and dependable performance. Plymouths are built to stand up in all kinds of service and under all conditions.

While our plant is "geared up" on work for Uncle Sam, we can possibly co-operate with you in the installation of track haulage. Write and tell us your requirements . . . no obligations, of course.

PLYMOUTH GASOLINE and DIESEL LOCOMOTIVES
PLYMOUTH LOCOMOTIVE WORKS
Division of The Fafe-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

You get Operating Advantages in BLAW-KNOX BUCKETS due to better Structural Features



The HEAD preserves Cable Alignment



The rigid head in Blaw-Knox Buckets preserves fixed cable alignment between upper and lower sheaves, avoiding cable wear caused by loose or wobbly head construction.

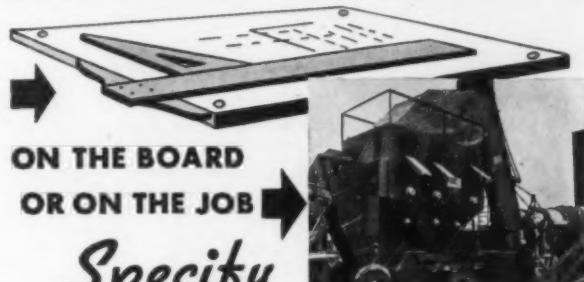
All four corner bars are mounted directly on the head pin, thus all impact or pounding action between the head and scoop structure is transmitted directly and not through bolts or rivets.

This and many other exclusive features of Blaw-Knox Buckets are explained and illustrated in CATALOG No. 1757. Write for your copy today.

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BLAW-KNOX Digging and Rehandling BUCKETS

BLAW-KNOX BINS AND BATCHERS • ROAD FORMS • STREET CONCRETE • DUST SHOVELS • CANTER HOPPERS • CONCRETE BUCKETS • CLAM SHELL BUCKETS • TRUCK MIXERS • STRIPPING MACHINES • TURNTABLES • ROAD FINISHERS • STEEL FORMS

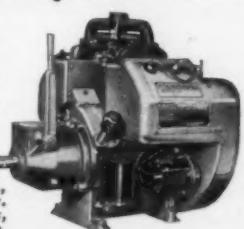


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OR ON THE JOB

Specify
WISCONSIN Air-Cooled Engines

In the development of new equipment, as well as in the efficient utilization of existing machines . . . the power factor is more important today than ever before. That's why Wisconsin Heavy-Duty Air-Cooled Engines rate Number One Consideration.

Model VE-4, 22 hp.,
4 cyl., V-type Engine.
Other types and sizes,
1 and 4 cyl., 1 to 35 hp.

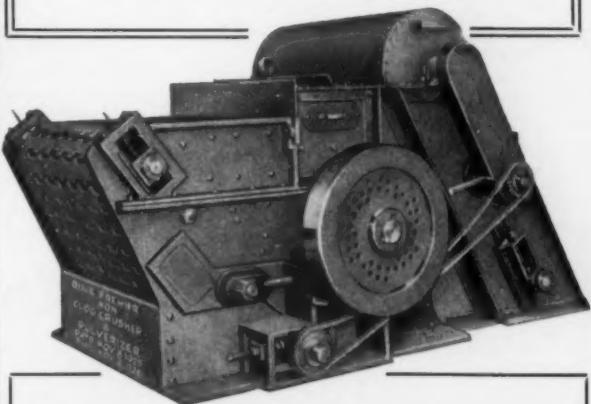


WISCONSIN MOTOR
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MILWAUKEE, WISCONSIN, U. S. A.
World's Largest Builders of Heavy-Duty Air-Cooled Engines

FEBRUARY, 1943

WHEN PRODUCTION CANNOT LAG

DIXIE GETS THE CALL!



DIXIE Non-Clog HAMMERMILLS

NOTE THESE TYPICAL TOUGH JOBS
LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
3. Crushing phosphate muck in T.V.A. Tennessee plant.

HERE'S WHY . . .

The Dixie Non Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be moved forward or backward from the hammer points, quality and size of production can be controlled. This feature provides additional assurance against clogging. These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

DIXIE MACHINERY MFG. CO.
4202 Goodfellow Blvd., St. Louis, Mo.

GET THE FACTS!

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Please send free booklet on Dixie Non-Clog Hammermills. We want to crush . . .

Name . . .

Company . . .

Address . . .

City . . . State . . .

Foundry Sands

(Continued from page 92)

Jersey, near to the Dorchester-Millville deposits, the company has expanded in recent years. Washing and classifying plants outstanding for the foundry sand industry have been built. One was completed in 1937 and the newest in 1941. Two drying plants and one for blending were also built on that property.

The new washing plant is particularly well-equipped to wash and size a variety of products. A 4-in. Millville dredge pump discharges sand and water into a box which splits the

flow to two Link-Belt conical screens which reject plus 14-mesh grains. The throughs enter a Dorr hydro-separator for de-silting and the desilted sand is delivered into an 8-pocket Fahrenwald sizer by a 4-in. Wilfley pump.

Eight different grades of sand, classified by hindered settling in the sizer, can be discharged separately or in any combination to four Dorr rake classifiers. The products discharge into ground storage.

Overflows from all the machines enter a 24-ft. Dorr thickener and the product of the thickener is pumped

by a Dorr diaphragm pump into a Dorr classifier to make a fifth product. The plant built in 1937 has different types of equipment to do the same work. Minus 14-mesh sand and water are flumed into a series of three Link-Belt Shaw classifiers, 30- and 24-in. diameters, to make three grades. Overflow from the third one is processed in a Rotoscoop to make a fourth grade and an extremely fine grade is recovered, in a settling basin, from the overflow of the Rotoscoop. This plant also has open ground storage. Shipments from both plants are made in gondola cars.

The drying plants are alike. Trucks haul the sand to a hopper from which a reciprocating feeder and belt elevator feed it into a 5- x 30-ft. oil-fired Millville dryer. Dried sand is screened over 10-mesh cloth to waste oversize.

A gravel plant was built in 1941, for foundry gravel or bonded sand. When sand is to be blended, two or three sizes are hauled in trucks to a hopper. At that point a pivoted belt conveyor carries it to a disintegrator or to a second belt. Gravel from the pit is hauled in trucks. It bypasses the disintegrator and the second conveyor feeds it into two revolving screens. Throughs drop into a bin and a belt under the bin loads the gravel into cars. Gravel can also be loaded without screening it.

Other Operations

In 1920, the company started operations in Cattaraugus County, western New York State, to produce well bonded molding sands for casting radiator sections, and light and medium malleable castings. This is not a high permeable sand, and is a river sand containing some silt. It is excavated by hand since it occurs in lenses. At Provincetown, Mass., and at Mexico Bay, N. Y., dune sands are being excavated. These sands have extremely uniform grains that have been cleaned, polished and classified by the wind and waves. Core sands are excavated at Wareham, Mass., and Providence, R. I.

Officers of the company are Alfred J. Miller, president and general manager; Andrew Y. Gregory, vice-president and sales manager; Van Loan Whitehead, Jr., vice-president; James H. Whitehead, secretary; and E. C. Lass, treasurer. J. H. Whitehead is New Jersey production manager, at Dorchester, N. J.; C. Mathiesen is New York State and North Jersey manager at Albany, N. Y.; and Charles E. Andrews is New England manager, at Providence, R. I.

AT METROPOLITAN— SAND AND GRAVEL CO.



At the highly efficient modern plant of the Metropolitan Sand and Gravel Co., of Port Washington, Long Island, N. Y., as at hundreds of plants throughout the country, a Merrick Weightometer is helping to speed up war time production. Its automatic reliable operation gives accurate weight records of the sand and gravel, as conveyed to the loading dock. It saves precious manpower, time and materials.



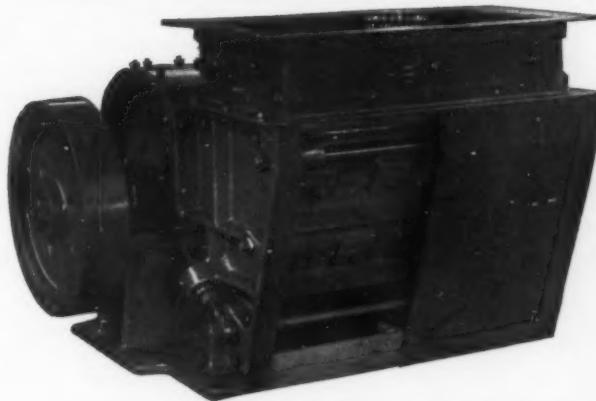
Merrick Weightometers are used for recording the weight, while transported on a conveyor, of various materials, such as sand, coal, gravel, clinker, asbestos, and minerals of all kinds, without interrupting the flow of material. Weights can be recorded in pounds, tons, barrels or any desired units.

MERRICK WEIGHTOMETER

Merrick also offers Feedoweight for any operation requiring accurate automatic feeding or proportioning by weight. Feedowights are used in many cement plants for proportioning two or more materials for raw or finished mixes, such as limestone and shale, clay and limestone or clinker and gypsum. An automatic totalizer gives the weights of all materials so fed.

MERRICK SCALE MFG. CO.
Automatic Continuous Weighing Machines
PASSEIC
NEW JERSEY

Ask Ag-stone Producers Why They're AMERICAN Users



THEY'LL tell you it's because AMERICAN Crushers operate at lower power cost, improve output, stay on the job without breakdown.

AMERICANS are powerful, ruggedly built, simple in design, for all-around superior performance.

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AMERICAN PULVERIZER CO.
1245 MACKLIND AVE. ST. LOUIS, MO.

Via Barber-Greene



- Securing economical distribution and compact plant design, this Barber-Greene system of conveyors was worked out to screen into three sizes. Outstanding is the fact that the three B-G stockpiling conveyors are supported out of the pile by B-G steel A-frame supports, greatly aiding reclamation operations.

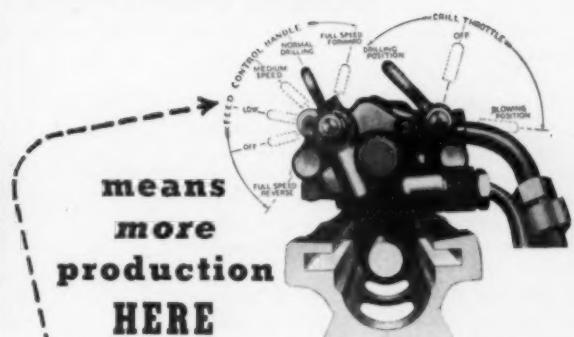
- The reciprocating feeder, four belt conveyors, and A-frames are all B-G standard pre-engineered units, selected for this construction. Our engineers can help you with your material handling problems.

Q-26

BARBER-GREENE
AURORA, ILLINOIS

FEBRUARY, 1943

Easier control HERE



means
more
production
HERE

Feed and throttle controls are grouped together on the drill back-head



All Controls Are Grouped Together on the Drill

1. No stretching between the drill throttle and the feed control.
2. One hand operates both throttle and feed—leaving the other hand free to regulate water valve if necessary.
3. Controls are always within easy reach of the drill runner.
4. No "nursing" of the feed to keep it from "crowding"—once the feed control is set, the drill does the rest.
5. Requires no "third" hose to supply the feed—no separate oil supply—the Line Oiler does it all.
6. All moving parts are enclosed in the drill proper.
7. Stationary feed screws have no bearings to wear.

TO GET the high production you need today requires drifting drills designed for production. That's why Gardner-Denver Continuous Feed Drifters are so popular with operators and drill runners throughout the country.

The easier control of these drifters enables your runners to produce more ore—their reduced vibration and "slow-motion" feed motor assure uninterrupted production.



Gardner-Denver
CF79
Continuous Feed Drifter

Get complete facts from
Gardner-Denver Company
Quincy, Illinois



GARDNER-DENVER Since 1859

Calcination

(Continued from page 51)

the loading of the rotary kiln as a factor affecting the problems inherent with the efficient preparation and use of the fuel.

Unless deliberately changed for some temporary purpose, or due to some condition beyond immediate control, the loading of the kiln should be maintained uniform if the kiln is to perform at its maximum possible overall efficiency. Fluctuations in kiln load result in irregular operation, and the burner or operator so be-deviled must hop around like a flea with a fit to keep his kiln from getting now too hot and now too cold.

Rings—Heavy Coating

Possibly in the rotary kiln burner's Utopia or Valhalla or even in Avernum, he will find under his care a rotary kiln which will not be afflicted with rings or heavy coating. His chances of getting such a charge on this Earth are remote indeed, for despite his every effort they build up before his very eyes. Yet when he turns "her" over to his relief "she's better than she was when I got her." And so it goes, ad infinitum.

Kilns have operated for weeks at a time and behaved like perfect ladies.

Then for some unknown reason they go into a tantrum and, typically feminine, one never knows when they will come out of it. Acts of tender devotion go unheeded. Little gifts of technical goodies leave them heatedly un-

making "good stuff" in abnormal quantities, and once again they become the docile sweethearts of their perplexed lords and masters. Temperamental as a prima donna, unpredictable as a girl at her first party, is it any wonder they are called "She"?

Don't for a minute let her fool you into believing you thoroughly understand her or that you have caught on to her ways. This is the sure path to disappointment. A hard master you must be, yet every whim and fancy must be anticipated and satisfied when called for.

Causes

Any attempt to set forth a hard and fast statement as to the causes of rings and heavy coating would be considered presumptuous. To attribute rings and heavy coating to one definite cause or set of conditions probably would be to state the facts incorrectly, at least insofar as practical considerations are concerned. We can determine quite accurately, for instance, that the ring or coating is generally higher in impurities than the dominant material. As a general rule this is a token of reduced refractoriness for at least some portion of the kiln load. But the precise source

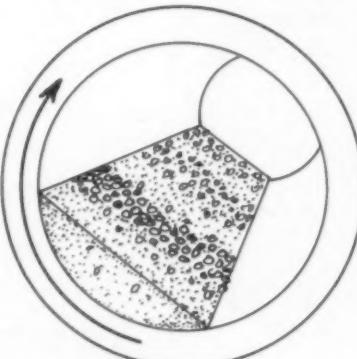


Fig. 5: Segregation or "banding" of the material often occurs as the load travels through the kiln due to excessive quantities of fines

responsive. In final desperation they are damned for no-good hussies and vows taken to leave them to their own evil ways, and then, lo and behold, they turn ladylike once again and disgorge their accumulation of filth and trash and once more settle down to the good steady business of

**MAKE YOUR
Shovel,Crane
or Dragline
LAST
LONGER!**



You who have LIMA shovels, draglines and cranes are fortunate in having machines that are built to serve their owners throughout a long, profitable life; but regardless of how good a machine is, it requires normal servicing. Today when it is difficult to get new equipment because of war work, it becomes definitely important that you give your present equipment proper care. To assist you in this respect we have prepared a 32 page booklet, titled, "Timely Tips for the Shovel, Dragline and Crane Operator." The booklet is full of information to help the operator get better and longer service from his machine.

Your copy is ready, write for it today.

LIMA LOCOMOTIVE WORKS, INCORPORATED
Shovel and Crane Division LIMA, OHIO

FREE! *Get Your Copy NOW!*

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LIMA, OHIO

Gentlemen:

Please send me a copy of your "Timely Tips" booklet.

Name _____

Street _____

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Firm _____

*Buy War Bonds
and Stamps!*

of the impurity is not always quickly or easily discernable.

What we will call heavy coating is an extensive area of kiln wall covered with an interfering thickness of built-up material deposited from the kiln load. This is generally found in that region of the kiln where the higher temperatures prevail. Rings are not so extensive, possibly two or three feet in width, extending rather sharply into the kiln opening, and are liable to be formed in almost any portion of the kiln.

If we study the texture of the ring or coating, this also tells us a story. Some are solid masses of fused material. Others are composed of fines cemented together. Still others are a mixture of fines and coarse with the fines predominating, and yet still others have the texture of popcorn balls when large pieces are cemented together without appreciable fines being present.

In every case, then, we have this evidence of cementing action caused at least by partial fusion, or fusion of part of the kiln load. Consequently it is wise to look for those factors that facilitate this fusion.

They are really few in number, being: (1) Impurities of, or which affect by chemical combination, a lower fusing temperature than the dominant material. (2) Excessively high temperatures.

Impurities

Dirt has been defined as material out of place. Thus in the manufacture of cement we find relatively large quantities of silica, alumina, and iron oxide in the mixture being processed in the rotary kiln, but when burning lime in the rotary kiln silica, alumina and iron oxide are impurities, or material out of place and therefore dirt. An essential ingredient or ingredients for one product is dirt to another, and the classification of impurities therefore depends upon specific conditions. Nevertheless any unusual or unnecessary material present in the kiln, which, in itself or in combination with the dominant material, causes a lowering of the melting point of a portion of the load, can promote the formations under discussion.

Crude Material

The sources of these impurities may be found largely in the crude, raw material itself. And an evenly distributed impurity will prove not nearly so troublesome as when unevenly distributed. Thus small seams or pockets of the impurity will prove immeasurably more troublesome than the same quantity of the same

PULVERIZERS for the reduction of Cement Materials, Limestone, Agricultural Limestone, Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour

Finenesses: 20 to 350 mesh

BRADLEY PULVERIZER CO.

ALLENTEWON, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—

To Reduce Power and Maintenance Costs—

To Insure an Absolutely Uniform Product—

Use the BRADLEY AIR SEPARATOR

THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

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NEW YORK, U. S. A.

11 Walpole Road
SURBITON, SURREY, ENG.

Canadian Licensee: E. Long, Ltd., Orillia, Ontario



The TY-ROCK FULL FLOATING CIRCLE THROW SCREEN



Coarse and Medium Sizes
Live Rubber Mountings
No Escaping Vibration

The
W. S. Tyler
Company

CLEVELAND, OHIO, U. S. A.

Don't Scrap it - WELD IT

No Waiting! No Delay

Deliveries are no problem when you repair worn parts with MANGANAL WELDING PRODUCTS. MANGANAL will rebuild your buckets, dipper teeth, frogs, crossings, gyratory crushers, jaw crushers.

Repair your broken and worn parts with Manganal—it's the easy, quick, and efficient way. Manganal alloy steel welding, wedge bars and shapes give new lives to old parts.

STULZ-SICKLES CO.
NEWARK, N.J.



ARMY & NAVY

- PREformed
- Internally Lubricated
- Made from selected steels
- Made by craftsmen with years of experience

NO. 606

MACWHYTE COMPANY
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Distributors throughout the U. S. A.

MANGANESE STEEL CASTINGS

for
PULVERIZERS
CRUSHERS
ROLLS
SCREENS



for
SHOVELS
DREDGES
CRANES
CONVEYORS

The Frog, Switch & Mfg. Co.
Established 1881

CARLISLE, PA.

Prevent BURN-OUTS at both KILN-ENDS

The use of PYRASTEEL Kiln Ends is not by any means confined to the *discharge end*.

Such high temperatures are frequently encountered at the *feed end* of the kiln, as to make the use of

PYRASTEEL SEGMENTS

the most practical method of preventing *burnouts* and interrupted operations.

There are many PYRASTEEL installations on the *feed end* and on the *discharge end* of rotary kilns . . . also where both the *feed* and *discharge* ends are provided with PYRASTEEL Segments. All are giving satisfactory results.

*Write for Bulletin on this
Heat-Resisting Alloy*



CHICAGO STEEL FOUNDRY COMPANY

PYRASTEEL
for heat-resisting alloys

KEDZIE AVE. & 37TH ST.
CHICAGO
Makers of Alloy Steel for 30 Years

EVANSTEEL
for strength

Calcination

impurity when evenly and thoroughly dispersed throughout the bulk of the raw or crude material. The practice of mixing before processing of high grade material to "sweeten up" lower grade material to meet a predetermined composite specification may be good business, but it is poor operating practice. If persistently indulged the kiln operation will eventually suffer. Oh, yes—it works all right for awhile, possibly several days or even a week, but keep on the alert because it will catch up to you in the end.

Closely allied to the violation of the requirements of *chemical uniformity* is the violation of the requirement of *physical uniformity* as a source of these troubles. Excessive quantities of fines especially should not be present when the load contains a majority of coarser material.

Fuel a Source of Impurities

Bituminous coals can be a troublesome source of impurities. When we realize that the quantities of ash involved in an ordinary day's run will be measured in tons, we appreciate the importance of using good fuel, good fuel preparation, good firing practice, and good control of kiln gas velocities.

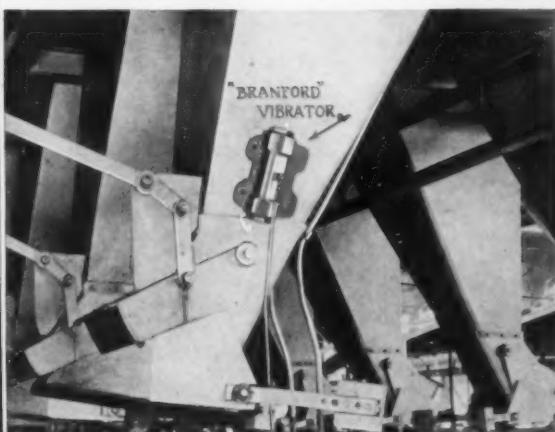
A rotary kiln producing lime at a rate of 150 tons per day with a coal-fuel ratio of 3 to 1 uses 50 tons of coal per day. With an ash content of 9 percent the equivalent ash is 4.5 tons per day being blown into the kiln. More or less of this ash comes in contact with the incandescent wall of the kiln, and when it does, it's there to stay for awhile. Farther toward the feed end of the kiln the ash may drop out of the traveling gases and join the load, thus being returned to the high temperature zone to join that which remained.

Those fortunate enough to have fuel such as oil or gas in their economic favor are really blessed, at least with regard to contamination by fuel ash.

Some rings, especially those in the relatively cooler regions of the kiln, frequently contain large quantities of combined sulphur, and high-sulphur coals have been accused of this contribution to the general problem. It does seem possible that with a wet feed to absorb the gaseous sulphur compounds, and with a reducing atmosphere (over-firing fuel), something of this kind might happen. It is also possible that pyrites in the raw material would produce this result.

(Continued on page 100)

"BRANFORD" PNEUMATIC VIBRATORS



If you are interested in increasing the efficiency of your material handling equipment, we suggest you write us for data on our Vibrators for use on Hoppers, Bins, Chutes, Concrete Buckets, Screening Devices or in any place where bridging over or hanging up of material occurs.

Prevents costly damage to equipment by sledging; cuts down labor costs and increases production.

We also manufacture *Vibrators* for placing concrete—Pipe Forms, Tanks, slabs, joists, etc.

NEW HAVEN VIBRATOR CO.
145 CHESTNUT ST. NEW HAVEN, CONN.

NOW - MORE THAN EVER BEFORE.....

It is necessary to install equipment with long life built into its construction. Simplicity Gyrating Screens have a proven record of long life, made during the past seventeen years of operation in 1,500 different plants.

In addition, we maintain the very efficient Parts and Service Department of our company, ready at all times to provide the proper maintenance needed today to keep your equipment operating at top efficiency.

SIMPLICITY ENGINEERING CO.
DURAND - - - - MICHIGAN

BELT LACING and FASTENERS
for transmission and conveyor belts



"JUST A HAMMER TO APPLY IT!"

ALLIGATOR

Trade Mark Reg. U. S. Pat. Office

STEEL BELT LACING

World famed in general service for strength and long life. A flexible steel-hinged joint, smooth on both sides. 12 sizes. Made in steel, "Monel Metal" and non-magnetic alloys. Long lengths supplied if needed. Bulletin A-60 gives complete details.

FLEXCO HD

BELT FASTENERS AND RIP PLATES

For conveyor and elevator belts of all thicknesses, makes a tight butt joint of great strength and durability. Compresses belt ends between toothed cupped plates. Templates and FLEXCO Clips speed application. 6 sizes. Made in steel, "Monel Metal", non-

magnetic and abrasion resisting alloys.

By using Flexco HD Rip Plates, damaged conveyor belting can be returned to satisfactory service. The extra length gives a long grip on edges of rip or patch. Flexco Tools and Rip Plate Tool are used. For complete information ask for Bulletin F-100.

Sold by supply houses everywhere

FLEXIBLE STEEL LACING CO.

4684 Lexington St.
Chicago, Ill.



"CONVEYOR BELTS EASILY FASTENED"

Getting Out
the Gravel



for Uncle Sam!



On the Santee-Cooper power and navigation project, 50 miles from Charleston, S. C., The Becker County Sand & Gravel Co. supplied 700,000 tons of gravel and 150,000 tons of sand. Four Link-Belt Vibrating Screens handled this material at different stages working with great accuracy and at low operating cost. Their dependable performance have made them the choice of production men in all parts of the country. Ask for Book No. 1762.

LINK-BELT COMPANY
2045 W. Hunting Park Ave., Philadelphia 3009

LINK-BELT
Vibrating Screens

WRITE
TODAY!

MODEL 51

TRADE MARK

KEYSTONE
REGISTERED U. S. PATENT OFFICE

BLAST HOLE DRILL CRAWLER MOUNTED AND STABLE IN TRACTION—*Short moves can be made with derrick standing.*

The outstanding feature of this modern rock drill is its welded and riveted sturdy frame. Pounding down six inch holes in hard rock, gives a rock drill a lot of jolts—and that is why KEYSTONE engineers employed a combination of both welding and riveting to give it a rugged and durable frame foundation.

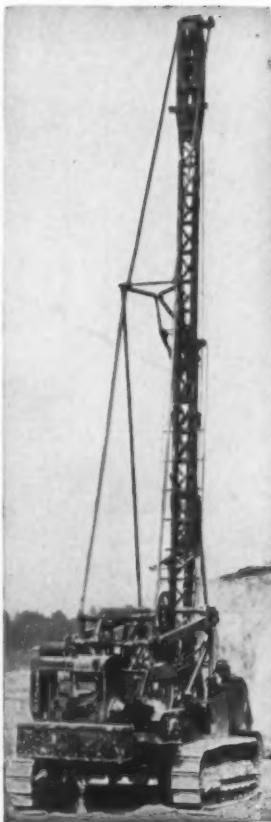
The working mechanism of the Model 51 crawler traction drill is likewise made to take rough service. Shafts and anti-friction bearings are oversized. The length and character of the stroke are adjustable to give greatest efficiency.

You can be sure of getting a superior piece of equipment that will give you dependable performance for years if you select a KEYSTONE Blast Hole Drill.

You will want to know more about it.

Write for Bulletin BD-1141.

KEYSTONE DRILLER CO.
Beaver Falls, Penna.



More Tons per Hour

WITH AN I. B. BUCKET

Properly designed—as a result of over 50 years experience—Industrial Brownhoist buckets are light in weight yet of extra sturdy construction. Large sheaves reduce rope wear and maintenance to a minimum. Deep clean bites practically eliminate hand shoveling. Standard types (rope-reeve, power-wheel, link-type) in stock for immediate delivery.

Write for complete information.



INDUSTRIAL BROWNHOIST

BAY CITY, MICH. • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

Calcination

(Continued from page 98)

Although it is not generally considered of any great significance, the abrasion product of the kiln lining, in that section where no protective coating adheres, can possibly introduce impurities of an undesirable nature. The quantity might not be great, but depending on its characteristics, it may augment other sources to a troublesome degree.

Cooler Dust

High thermal efficiency demands the greatest possible return to the kiln of the heat of the discharged material. This is usually accomplished by using the hot processed material to heat the primary and secondary air for combustion. This transfer of heat is most effectively occasioned by directing the in-going air through the hot, cascading finished material in intimate contact and at fairly high velocities. Any fine, dusty particles that will be held in suspension by the moving body of air will therefore be carried back into the kiln.

Not only does this air-borne dust create a hazy atmosphere in the kiln, but it may be so constituted that it creates a serious contamination problem. For instance there are two modifications of calcium silicate, the one stable above 600 deg. F. and the other stable below this temperature. As this substance passes through the cooler and the lowered temperature requires an alteration to the other modification, this change in structure results in a complete physical breakdown to an impalpable powder which is easily floated away by the moving air body. If such dust, under the influence of the heat in the firing zone, coalesces or impinges upon an incandescent surface, it immediately becomes attached to it, and a vicious cycle is repeated.

Overheating

Besides the presence of impurities as a direct cause for rings and heavy coating, there is also possible the existence of a state or condition which may not only aggravate but actually be the sole agent of serious operating difficulties. Thus overheating of the kiln must be considered as a state of affairs to be avoided because materials infusible at regular or normal operating temperatures may be fused at temperatures exceeding the normal.

New Gravel Pit

A NEW GRAVEL PIT has been opened on the Frank Williamson farm near Valeria, Iowa.

Trucking Controls and Rubber Conservation

From address before Cleveland convention

At the Thursday afternoon joint session, GARVIN PELSUE introduced EDMOND J. BRADY, assistant director, Division of Motor Transport, O.D.T., who told the sand and gravel and ready mixed concrete producers



Edmond J. Brady

what they might expect in the way of truck regulation and rubber tire equipment. Transportation is being conserved by cutting out duplication of truck lines, combining services, pooling equipment, etc. Only 45 per cent of the rubber stocks, he said, are available for civilian requirements. Mr. Eastman of O.D.T. has repeatedly said that we must produce in 1943 an aggregate of 40 per cent mileage savings as compared with the total mileage operated during 1941. To encourage joint action for the pooling of trucking facilities, Mr. Brady said that the Department of Justice has approved the plan. Citing the solid fuel industry's experience in Chicago where joint use of trucks, equipment, and yard facilities are made to conserve transportation, he said that similar action may be carried out.

Mr. Brady referred to General Order No. 6 of the O.D.T. which provided that all carriers within municipalities and a 25 mile outside radius should cut down mileage 25 per cent as compared with 1941, with certain exemptions. Under General Order No. 17, effective August 21, 1942, incorporating requirements of No. 6,

(Continued from page 46)
certain further restrictions were placed upon loading and speed. Order No. 21, effective December 1, 1942, requires that operators of commercial vehicles obtain a Certificate of War Necessity, which governs maximum mileage and minimum loads. Without a certificate no gasoline, tires or repair parts can be obtained.

New trucks have been allocated to essential operations; curtailment of services has released some trucks, but trucks are wearing out faster than new trucks can be made available. In view of this situation, greater care must be taken of existing equipment and worn parts must be rebuilt or repaired.

Making Agstone

FRANK C. GREEN is operating an agricultural limestone crushing plant at Bear Creek near Astoria, Ore. He recently added Diesel power to operate a hammer mill.



The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

Established 1857

5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
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Only 15 seconds to load, dump or set bucket back on the ground.

Brooks LOAD LUGGER

... the answer to truck shortages

Write for details today... complete Catalog on request.

Has the critical scarcity of trucks and tires hit your business? Then you will have to find a way to do more with what you have! You can greatly increase the payload capacity of any truck you now own... without performing a miracle either. Just mount a LOAD LUGGER on the chassis and operate with several detachable buckets. This cuts out time waste... no idle trucks waiting to be loaded. You can haul and dump the loaded buckets continuously, while the empties are being filled.

Brooks EQUIPMENT AND MFG. CO.

Distributors in All Principal Cities

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KNOXVILLE, TENNESSEE

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service



EARLE C. BACON, Inc.

17 John St., New York, N. Y.

OBITUARIES

HARRY W. VICKERY, superintendent, Franklinville, N. Y., sand and gravel plant of The Buffalo Slag Co., Inc., Buffalo, N. Y., died recently at the age of 58. He had been engaged in supervision of this operation for the past 17 years. In addition to being an expert in the processing of sand and gravel, Mr. Vickery was an electrical engineer and had devoted considerable time to his electrical contract business before he joined the supervisory force of The Buffalo Slag Co.

E. C. FINK, president and chairman of the board of Mack Trucks, Inc., New York, N. Y., died recently at the age of 62. A pioneer in the truck industry, Mr. Fink had been an officer of the company since its organization in 1911, following a consolidation of the Mack Bros. Motor Car Co., the Hewitt Motor Co. and the Sauer Motor Truck Co.

HARVEY S. OWEN, former engineer for the Portland Cement Association, Milwaukee, Wis., and author of many articles on lime and its uses, died recently at the age of 56. Born in St.



Recognized Universally
as the ULTIMATE in
Valves and Couplings

KNOX
MANUFACTURING CO.
818 CHERRY ST., PHILA. PA.

Since 1911 Producers of

KNOX
Valves-Couplings-Nipples-Clamps-Holders

CROSS Screens for Vibrating,
Revolving and Shaking Equipment
will INCREASE production
and SAVE manpower and
critical materials

Cross SERVICE AGENCIES
Located in All Principal
Cities



CROSS ENGINEERING COMPANY
Manufacturing Plant and Offices, CARBONDALE, PENNA.

HAYWARD
BUCKETS

WON'T QUIT
OR CAUSE TIME OUT

A Hayward Bucket keeps the job
going ahead on scheduled time. It
won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

RUD-o-MATIC TAGLINE



A FOOL-PROOF TAGLINE

The Rud-o-Matic Tagline is operated on a spring principle and maintains at all times a positive tension sufficient to steady a clam shell bucket under any and all conditions, and will operate perfectly with the boom at any angle. It eliminates all the grief usually encountered with the average tagline as there are no weights, tracks, pins, carriages, or sheaves to wear out or to get out of order. Because of the large bearing and fewer sheaves, the saving on cable alone would eventually pay for it.

Tagline is complete with fair lead and cable attached and can be installed in less than one-half hour. Most of the crane manufacturers have adopted the Rud-o-Matic as standard equipment.

Manufactured by

McCaffrey-Ruddock Tagline Corp.
2121 E. 25th St., Los Angeles

Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement, lime and any other finely ground metallic or non-metallic material within a range of 80 to 400 mesh.

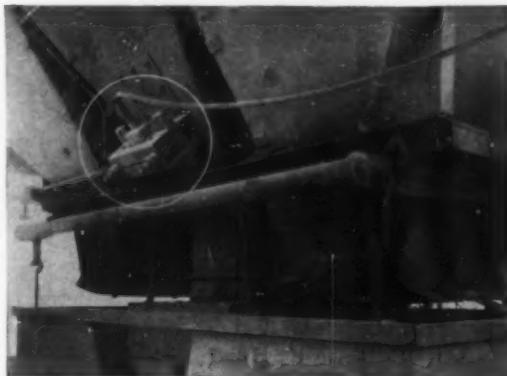
- Greater Capacity
- Cleaner Trailings
- 99% Through 325 Mesh
- 25% to 30% greater recovery of fines
- Not affected by variation in speed or rate of feed



Manufacturers also of "Reliance" Crushers, Screen, Elevators, conveyors, Bin Gates, Grizzlies. Complete crushing, screening and washing plants for crushed stone, sand and gravel.

Universal Road Machinery Co.

RUBERT M. GAY DIVISION 117 Liberty St. New York, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal
FACTORY & LABORATORY, KINGSTON, N. Y.



FOR FREE FLOWING Bins, Hoppers and Chutes

Apply
SYNTRON

Adjustable Power

ELECTRO-MAGNET VIBRATORS

Write for New Illustrated Catalog

SYNTRON CO., 450 Lexington Ave.
HOMER CITY, PA.

FEBRUARY, 1943

MAKE EVERY DAY "SCRAP SALVAGE DAY"

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE



We cannot afford to let down for a moment on this grim job of winning the War—and that means—SCRAP METAL MUST CONTINUE TO POUR INTO THE STEEL MILLS! As our war production mounts MORE and MORE SCRAP will be NEEDED. Take another look! Be on the ALERT! Start every bit of metal you can dig up on its way to battle.

EXPORT OFFICE **BROWN & SITES** 50 Church St., N. Y.
Cable Add. "Brosites"

DAVENPORT LOCOMOTIVE WORKS

A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

LONGER SCREEN LIFE Is Doubly Essential, Today



Wartime is no time for unnecessary shutdowns and repairs. With screens of heat treated, high carbon Hendrick Perforated Plate you will enjoy longer service and all-around increased screening efficiency. The full clearance reduces clogging. Uniformity of screening is improved, also, since the mesh itself remains more uniform throughout the life of the screen.

HENDRICK MANUFACTURING CO.

47 Dundaff St., Carbondale, Pa.

SALES OFFICES IN PRINCIPAL CITIES

PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types, Miteo Open Steel Flooring, Miteo Sheet Treads and Miteo Armorgrids. Light and Heavy Steel Plate Construction.

MOVE MORE TONS WITH LESS LABOR



Sauerman Scraper Stockpiling

Thousands of producers of mineral aggregates have testified to their satisfaction with SAUERMAN Scrapers and Cableways for digging, conveying and stockpiling.

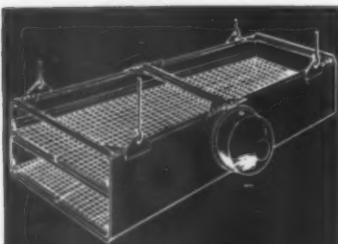
First cost of a SAUERMAN machine is reasonable, operation is an easy one-man job, maintenance expense is small.

SAUERMAN engineers will be glad to study your stockpiling and excavating problems. Their advice may help you to increase your profits. Investigation costs you nothing.

Write for catalog

SAUERMAN BROS., INC.
530 S. Clinton St., Chicago

SAUERMAN LONG RANGE MACHINES



GYROSET VIBRATING SCREEN

5 DISTINCTIVE FEATURES . . .

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.



LOW COST—EFFICIENT—
ECONOMICAL

Write for Bulletin No. 999

Productive Equipment Corp.
2926-28 West Lake St., Chicago, Ill.

Louis, Mo., Mr. Owen was graduated from the Missouri School of Mines, Rolla. He was state chemist of Missouri and chief engineer of construction for the city of St. Louis before moving to Milwaukee where he first was employed as engineer for the Portland Cement Association and for the Western Lime and Cement Co. Later he became consulting engineer for E. D. Coddington Mfg. Co. At the time of his death he was field engineer for the George S. May Co., Chicago. Mr. Owen was also former deputy W.P.A. state administrator in Madison, Wis.

MICHAEL H. TUOHY, prominent sand and gravel contractor of Helena, Mont., died recently at the age of 72.

FRANCIS J. AREND, founder and president of the De Laval Steam Turbine Co., Trenton, N. J., passed away recently. He was also president of the De Laval Separator Co., which has grown from a very small beginning to a nation-wide organization during his association with it.

RICHARD ALBERT WATHEN, sales executive of the Kosmos Portland Cement Co., Louisville, Ky., and formerly president of the Louisville Auto Supply Co., died recently of a heart attack.

HANS STERNDORF, assistant personnel manager of the Universal Atlas Cement Co., Buffington, Ind., passed away recently at the age of 64. He had been with the company since 1923.

FRANK J. WESCHLER, vice-president of the Chain Belt Co., Milwaukee, Wis., and general manager of Baldwin-Duckworth, a division of Chain Belt at Springfield and Worcester, Mass., passed away recently.

RALPH T. MILLER, Sr., widely known cement expert, Atlanta, Ga., died recently at the age of 61. A native of Coatsville, Penn., he was for 18 years connected with the Pittsburgh Testing Laboratory, for which he established the steel and cement testing bureaus and opened several branch offices. Mr. Miller founded the Hermitage Portland Cement Co., Nashville, Tenn., and the Cumberland Cement Co., Cowan, Tenn. He was a former member of the Bureau of Standards in Washington and the American Society of Testing Materials.

CHARLES TISDALE, purchasing agent, New York Trap Rock Co., New York, N. Y., died recently at the age of 49.

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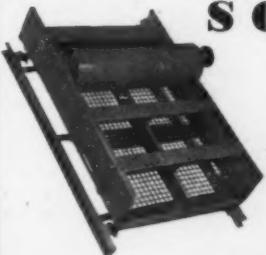
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RACINE -- WISCONSIN

Manufacturers' News

Fairbanks, Morse & Co., Chicago, Ill. announces that the Army-Navy "E" Award was presented to employees of the company's plants at Freeport, Ill., Beloit, Wis., and Three Rivers, Mich. Equipment built at the three plants is used by the Navy, Army, Coast Guard, Maritime Commission, Air Corps, and the Treasury Department for Lend-Lease to the United Nations.

Bucyrus-Erie Co., Milwaukee, Wis. has been awarded the second Army-Navy "E" pennant for production achievement. This award was presented to the Erie Works. Previously the company's South Milwaukee plant had received the same honor.

Union Wire Rope Corp., Kansas City, Mo. has been granted a renewal of the Navy "E" Award, for continued splendid achievement in outstanding production. This renewal gives the company the right to add a white star to their pennant.

Mack Trucks, Inc., New York, N. Y. has announced the election of Louis G. Bissell as chairman of the board and Charles T. Ruhf as president of Mack Manufacturing Corp. and executive vice-president of the parent company. Mack Trucks, Inc. Mr. Ruhf was formerly operating vice-president in charge of factories and has been with the company since 1912. Mr. Bissell, a member of the law firm of Chadbourne, Wallace, Park and Whiteside, has served the company for many years as a director and counsel.

B. F. Goodrich Co., Akron, Ohio, has established a new sales district for the national sales and service division for the Pacific Coast area, with the exception of Seattle, and Donald W. Fairbairn has been named district manager, with headquarters in Los Angeles, Calif. William R. Edwards, formerly salesman in the

industrial products division, will take over Mr. Fairbairn's duties on rubber tracks. W. B. Collier has been named sales engineer on fuel cells. H. V. Dwight, formerly technical representative in the Washington office, is sales engineer on rubber tracks. H. V. Kidwell has been assigned to the Detroit district, working with the Ordnance Department there; R. A. Maxwell has been named staff man on all tire problems other than aeronautical; and L. I. Gibbons has been transferred to the company's field engineering department with headquarters in Detroit.

John A. Roebling's Sons Co., Trenton, N. J., has announced the promotion of E. G. Hartmann to assistant general manager of sales. Mr. Hartmann's entire business career has been in the steel industry. In 1941 he was promoted from manager of round wire and flat wire specialties division to assist the general manager of sales. Douglas W. Vernon, previously chief of the priorities division of the company, has been made assistant to the general manager of sales. Mr. Vernon's entire experience of 20 years has been with the Roebling Co.

General Electric Co., Schenectady, N. Y. has announced the appointment of K. R. Van Tassel as manager of sales of the newly formed integral-horsepower motor section. D. A. Yates, of the same division, has been placed in charge of the Lynn motor group at the company's Lynn, Mass. plant. Mr. Van Tassel is a native of Geneva, N. Y., and a graduate of the Massachusetts Institute of Technology, class of 1925. He joined the General

Electric Co. as a student engineer the same year.

De Laval Steam Turbine Co., Trenton, N. J., has elected H. L. Watson, executive vice-president and director, to the presidency of the company, succeeding Francis J. Arend, who passed away recently. Mr. Watson graduated from Rose Polytechnic Institute in 1905 and served as erecting engineer and later as sales engineer with the Allis-Chalmers Co. until he entered the employ of the De Laval Company.

R. G. LeTourneau, Inc., Peoria, Ill. and Stockton, Calif., plants and office have been awarded the Army-Navy "E" pennant for excellence in the production of war material.

Pittsburgh Plate Glass Co., Pittsburgh, Penn., announced the appointment of K. C. Frazier as district sales manager of the New York Metropolitan area. Mr. Frazier is a graduate of Colgate University and for the last ten years has been southwestern manager of the Southern Alkali Corp., an affiliate of the Pittsburgh Plate Glass Co.

Allis-Chalmers Mfg. Co., Milwaukee, Wis., has won the coveted Army-Navy "E" award for excellence in production achievement at its tractor plant in Springfield, Ill. It is the first such award for tractor production.

The Falk Corp., Milwaukee, Wis., has appointed Frank J. Kevlin traffic manager. Mr. Kevlin, who has been handling the traffic work for a number of years will continue in his jurisdiction over the traffic division and in addition will act as manager of the shipping department.

The Timken Roller Bearing Co., Canton, Ohio, announces that F. H. Lindus has returned to the sales department of the company's service division and is now located in the San Francisco branch.

Robins Conveying Belt Co., Passaic, N. J., announces the appointment of John T. Hoyt as comptroller and R. C. Gray as works manager.



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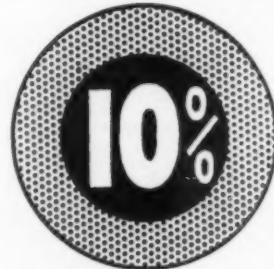
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USED ONE YEAR ON SLATE

1—20" Allis-Chalmers Superior McCully Gyratory Crusher, feed opening 20" wide, capacity 125 t.p.h. on 3" setting, 275 t.p.h. on 5/8". Shop No. 8311. With or without 125 H.P. 3/60/440 volt slip ring motor and controls.

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1—22"x50" Champion, all steel frame. Also an assortment of smaller sizes.

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1—36" x16" Sturtevant Mill Co.
2—40"x16" Colorado Iron Works.
1—42"x16" Allis-Chalmers Anaconda type.

1—30"x20" Jeffrey Single Roll Crusher.

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27' c/c—14x7; 29' c/c—14x7; 40'—7x5;
42'—10x6; 44'—7x5 belt; 70'—16x8;
90'—18x8; 3—100'—7x5 belt; all of these steel encased.

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5—18' Steel Frame in 18' sections, 4" cross channels, 6" long channels. Link-Belt troughing and return idlers, with anti-friction bearings; 50', 55', 100', 125', 150' centers.

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1—24"x15' c/c Jeffrey Steel Pan Conveyor.



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3"x20', 5x26', 5x30', 6x24', 6x50'.

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1—10' dia. Sturtevant Mill Co.

2—14' dia. Gayco.

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2—7x24' Smith Iron lined.

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2—5 roll high and low side, also No's. 0000, 1, 2.

5—Raymond Imp Pulverizers, also used for coal pulverizers; No's. 50, 55, 90.

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1—4"x8' 2-deck, Allis-Chalmers, heavy duty.

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Other makes and sizes.

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One complete Portable Dredging outfit, consisting of one AMSCO eight inch counterflow pump on Steel Pontoon barge, driven by two caterpillar motors, hoisting rig and all necessary equipment ready to operate. One 45-ton shay locomotive. Two 150 HP electric motors complete with grids and oil switches. One Kennedy-Van Saun gyratory crusher. All excellent condition. Address Box A-92, care Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

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Steam Driven Air Compressors
Large Steam Pumps
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36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In.
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6 Ft. x 60 Ft., 100x20, 7½x100x110 Ft. Kilns.

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GY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom,
20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom,
25 Ton 100 Ft. Boom, 75 Ton 125 Ft. Boom.

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Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

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4-7 ton Plymouth type 2, Model D L 24" gauge locomotives power gasoline engines.
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1-3½ ton Plymouth 24" gauge Model A L 105 gasoline power.
1-8 ton Whitcomb 24" gauge type U T gasoline power engines.

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1-No. 1 Brown hoist, Ser. No. 10271 with 35' boom.
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1-1 yd. North-West 105.
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Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

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Motors and Generators, A.C. and D.C., for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
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2 YARD BUCYRUS Electric Shovels

Ward Leonard Controls. Individual motors for each operation.

35 foot Booms—20 foot Dipper Sticks, 2 yard Esco Shovel Buckets

50 foot Dragline Booms available.

Completely reconditioned. Guaranteed.

For immediate shipment without priority.

Brown-Bevis Equipment Co.
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110 HP Diesel engine and generator.

1-36x60 Fairmount single roll crusher.
Revolving screen screens.
Large stock electric motors.
10 air compressors.

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ROCK PRODUCTS

IMMEDIATE SHIPMENT
LOW PRICES

NEW
RUBBER

GUARANTEED
HIGH GRADE

CONVEYOR and TRANSMISSION BELTING

CONVEYOR
BELTING
ABRASIVE
REINFORCED COVERS

Width	Ply	Top	Covers
48"	8	1/8"	1/16"
42"	5	1/8"	1/16"
36"	6	1/8"	1/16"
30"	6	1/8"	1/16"
30"	5	1/8"	1/16"
24"	5	1/8"	1/32"
24"	4	1/8"	1/32"
20"	5	1/8"	1/32"
20"	4	1/8"	1/32"
18"	4	1/8"	1/32"
16"	4	1/8"	1/32"
14"	4	1/16"	1/32"
12"	4	1/16"	1/32"

TRANSMISSION
BELTING
HEAVY-DUTY—
FRICTION SURFACE

Width	Ply	Width	Ply
18"	6	10"	6
16"	6	10"	5
14"	6	8"	5
12"	6	8"	4
12"	5	6"	4

ELEVATOR BELTING
HEAVY DUTY
RUBBER COVERED

Width	Ply	Top	Covers
12"	6	1/16"	1/16"
14"	6	1/16"	1/16"
16"	6	1/16"	1/16"
18"	6	1/16"	1/16"
20"	6	1/16"	1/16"
24"	6	1/16"	1/16"
30"	6	1/16"	1/16"

ENDLESS "V"
BELTS

"A"—	WIDTH—	ALL Sizes
"B"—	WIDTH—	" "
"C"—	WIDTH—	" "
"D"—	WIDTH—	" "
"E"—	WIDTH—	" "

Sold in Matched Sets

RUBBER HOSE

ALL SIZES FOR
AIR—WATER—
STEAM—SUCTION—
FIRE—WELDING
ETC.

INQUIRE FOR PRICES :—: MENTION SIZE AND LENGTHS

CARLYLE RUBBER CO., Inc.
62 PARK PLACE

NEW YORK, N. Y.

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 28" Superior McCully Gates Nos. 15, 19, 20, 24, 26, 30, 32, 34, 36, 38, 40, 42" (all). 26" 30" 34" 36" 38" 40" 42" 44" 46" 48" 50" 52" 54" 56" 58" 60" 62" 64" 66" 68" 70" 72" 74" 76" 78" 80" 82" 84" 86" 88" 90" 92" 94" 96" 98" 100" 102" 104" 106" 108" 110" 112" 114" 116" 118" 120" 122" 124" 126" 128" 130" 132" 134" 136" 138" 140" 142" 144" 146" 148" 150" 152" 154" 156" 158" 160" 162" 164" 166" 168" 170" 172" 174" 176" 178" 180" 182" 184" 186" 188" 190" 192" 194" 196" 198" 200" 202" 204" 206" 208" 210" 212" 214" 216" 218" 220" 222" 224" 226" 228" 230" 232" 234" 236" 238" 240" 242" 244" 246" 248" 250" 252" 254" 256" 258" 260" 262" 264" 266" 268" 270" 272" 274" 276" 278" 280" 282" 284" 286" 288" 290" 292" 294" 296" 298" 300" 302" 304" 306" 308" 310" 312" 314" 316" 318" 320" 322" 324" 326" 328" 330" 332" 334" 336" 338" 340" 342" 344" 346" 348" 350" 352" 354" 356" 358" 360" 362" 364" 366" 368" 370" 372" 374" 376" 378" 380" 382" 384" 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RECONDITIONED TRUCK MIXER FLEET

6—4-yard Jaeger Separate Engine Drive Truck Mixers mounted on A.C. Mack trucks.
 2—3-yard Blaw-Knox Separate Engine Drive Truck Mixers mounted on B.F. Mack trucks—1937.
 4—2-yard Jaeger Separate Engine Drive Truck Mixers mounted on 1936 E. H. Mack Trucks.

1—2-yard Jaeger Separate Engine Drive Truck Mixers mounted on 1941 Ford V-8 Ford.
 1—6-yard Jaeger Separate Engine Drive Truck Mixer mounted on Model DC 100 Autocar with dual range transmission—1940.
 4—12'-yard Hell steel dump bodies with hoists.

Rollers

1—10 ton 3-wheel Buffalo Springfield gas powered—shop No. 10899; engine No. 6B6131.
 1—10-ton 3-wheel Buffalo Springfield gas powered—shop No. 12571 with scarifier.
 1—7-ton 3-wheel Buffalo Springfield gas powered—shop No. 13442; engine No. 266257.

1—8-10 ton Tandem Buffalo Springfield gas powered—Hercules Engine No. 412899.
 1—8-ton Tandem Buffalo Springfield gas powered—shop No. 3997.
 1—5-ton—Iroquois—Tandem gas powered—shop No. 5138; engine No. 320556.

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 CORONA, N. Y.

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 54", 42", 36", 30" & 24" conveyor belt.
 4—36" belt conveyors, 100' to 200'.
 2—30" belt conveyors, 150' long.
 16" belt conveyor, 90' long.
 150 head & tail belt pulleys with accessories.
 150 driving pulleys and fly wheels, 6" to 8".
 Portable "Scoop" trough 18" belt conveyor, 35'.

CRUSHERS, MILLS, ROLLS
 Taylor "Bulldog" 11" gyratory crusher.
 Standard mill No. 8 rotary flour mill.
 Williams "Revolver" hammermill No. 2.
 Williams "Semi-Vulcanite" hammermill No. 2.
 Allis Chalmers double roll crusher, 42" x 16" "B".
 Jeffry single roll crusher, 36" x 30" with knobs.
 Single roll crusher, 24" x 24" with knobs.
 Amer. Std. double crushing roll, 36" x 30".
 Amer. Std. disintegrator, 18" & 24" x 30".

BUCKET ELEVATORS
 40' elevator, 10" malleable buckets on chain.
 6—25' belt elevators with 4" & 5" spaced buckets.
 50' elevator, 20" malleable bucket on 2 chains.
 50' elevator, 18" malleable bucket on 2 chains.
 50' elevator, 16" malleable bucket on 2 chains.
 40' elevator, 12" malleable bucket on chain.
 25' elevator, 6" malleable bucket on chain.
 40' elevator, 20" continuous buckets on belt.
 35' elevator, 18" continuous buckets on 2 chains.
 35' elevator, 18" continuous buckets on 2 chains.
 30' elevator, 8" malleable buckets on chain.
 150' elevator, 20" Salem buckets on 6' pitch belt.
 Gear sprockets, elevator & driving chain, bearings.
 Malleable Salem continuous steel bucket, 30x30".

SCREENS, CONASHERS, SAND TANKS
 2' Hammer 3x5' vibrating screen, 142' deck.
 4 revolving screens, 2x5', 2x6' x 12', 3x8', 4x16'.
 1 Telamith Screen sand washer, 29" x 12', V drive.
 2 Telamith No. 7 Tilding sand tanks.

AIR COMPRESSORS
 Chicago 14" x 12" belted, 100 hp. slip ring motor
 520 CFM.

Schramm 4 cyl. V belt to 60 hp. motor 360 CFM.
 Ing. Band 2 cyl. direct to 50 hp. Waukesha,
 275 CFM.

Ing. Band 6x6" vertical, hopper cooled, 44 CFM.

MISCELLANEOUS
 75 hp. Fairbanks-Morse diesel engine, YV, 300 rpm.
 8 ton Plymouth standard gauge locomotive.
 8 ton Whitecomb 30" g. locomotive.
 4 ton Vulcan 30" g. locomotive.
 Mercury 30" g. storage battery locomotive.
 Sprague 10 ton AC electric car puller.
 Sprague 6 ton DC electric car puller.
 Dryer, revolving 4x21', with 13" flue.
 Hopper, showing discharge latches.
 Koehring 1/2 yd. batch mixer on skids.
 Buffalo 15" bar cutter with power.
 Pumps, motor, engines, steel bins.
 Speed reducers, pressure and storage tanks.
 Generators for Hummer screens.
 Belt trippers for 24" & 30" belt.

G. A. UNVERZAGT & SONS
 136 COIT STREET IRVINGTON, N. J.

CONCRETE EQUIPMENT
 350-ton Concrete Plant, complete.
 Butler 12' x 18' 3' comp. bin with weigh batcher.
 B.K. 50 ton, 2' comp. bin with weigh batcher.
 Fuller Kilnay bulk cement unloader, portable.
 Fuller C40 rotary air compressor, electric.
 Rex Pumpcrete Model 200 with 750' pipe.
 Rex Pumpcrete Model 180 with pipe.
 Smith 27E Paver with 40 ft. Tower.
 Smith 27E Paver with 40 ft. Tower.

SPECIALS!!!
 Air Compressors, Stationary & Portable; many sizes.
 Allis Chal. Model L Tractor with 12' bulldozer.
 Allis Chal. Model K Tractor with bulldozer.
 Cletrac Model 80 Diesel Tractor with 12' yd.
 Derrick Boat equipped with 20 ton Wiley Whirley, 100' long, 12 x 12 Steam Hoist. Hull 33' x 114' x 10'.
 Butler 16 cu. ft. Asphalt Pug Mill.
 2—Steel Stiff-leg Derricks, 10 tons, 100' bin.
 2—Steel Stiff-leg Derricks, 15 tons, 110' bin.
 Hardinge Conical Ball Mill, 4½" x 16".
 Sullivan Compressor, 100 cu. ft. F.M. engine.
 Allis Chalmers Compressor, 125 CFM, 50 lb. pressure.
 Allis Chalmers pump, electric, 1500 GPM.
 Worthington 5" cast Bronze impeller, elec. port.
 Dredge Pump 16" FH, cast, 200 HP AC motor.
 Vertical Boiler, 50 HP, A.S.M.E. 125 lb. pressure.

CRUSHERS—CRUSHER PLANTS
 Gyratory crusher, K.V.S. 30, 37-5, 40; Telsmith 2, 5A, 8H; Taylor 8", McCully 12", 8", 6", 4", 6x12", 8x16, 10x20, 14x24, 12x26, 13x30, 15x30, 16x32, 50x84.
 Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS
 1½ yd. Williams Clamshell, rehandling.
 2 yd. Hayward Clamshell, rehandling.
 1—1½ yd. Hayward Clamshell Dredging.
 2—½ yd. Haas rehandling clamshell.
 ½ yd. Haas rehandling clamshell.
 Erie ½ yd. Rehandling, clamshell.
 20—Battleship Buckets, 2 to 3 yds.

SHOVELS—CRANES
 Bucyrus Erie Model 1030 electric tunnel shovel.
 Bucyrus Erie 50B Steam Shovel, 2 yds.
 Marion Model 90 Steam Shovel, 3 yds.
 Marion Model 460 Electric Shovel, 1½ yds.
 Marion Model 480 Steam Shovel, 2 yds.
 Hurcyns Erie Model GAZ, gas Crane, 40' boom.
 Marion Model 52 Steam Shovel, 1½ yds. cap.
 Erie Borehole 10 ton Cat. Crane, gas.
 Brownhoist 5-7½ ton Crane, gas.
 Universal 6 ton Truck Crane, solid tires.
 Northwest Model 105 gas Crane, 60' boom.

LOCOMOTIVES—CARS
 Vulcan 5 ton sid. gauge, gas.
 Plymouth 8 ton sid. gauge, gas.
 Whitecomb 4½ ton sid. gauge, gas.
 2—Vulcan 6 ton, gas, 30" gauge.

RICHARD P. WALSH CO.
 30 CHURCH STREET NEW YORK

AVAILABLE NOW!

25 ton Browning Locomotive Crane.
 125 HP, 100 to 250 lb. Firebox Boiler.
 1 to 3 yd. Dragline & Clamshell Buckets.

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 Have you anything to sell?

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RELAYING RAILS—Super-quality machine-reconditioned—not ordinary Relayers.
 NEW RAILS, Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates, all other Accessories. Although our tonnages are not as large as heretofore, most sizes usually available. Every effort made to take care of emergency requirements.

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FOR SALE

1—5 yard Sauerman Bottomless Scraper Bucket
 1—24 inch Stedman Impact Crusher
 Both A-1 condition.

HURST SAND & GRAVEL CO.
 P. O. Box 83 Dayton, Ohio

BRANCH OFFICE SERVICE

Tell us what you want done, we will do it. Charges satisfactory.

GRAHAM OFFICE SERVICE BUREAU
 711 Woodward Bldg. Washington, D. C.

FOR SALE
 1—Complete 10" electric dredge, steel boat;
 Cutter—A-1 condition.
 1—6" Vertical discharge AMSCO pump.
 1—6" Belt Driven AMSCO pump.
 1—10" Direct connected motor driven AMSCO pump.
 1—13" Direct connected motor driven AMSCO pump.

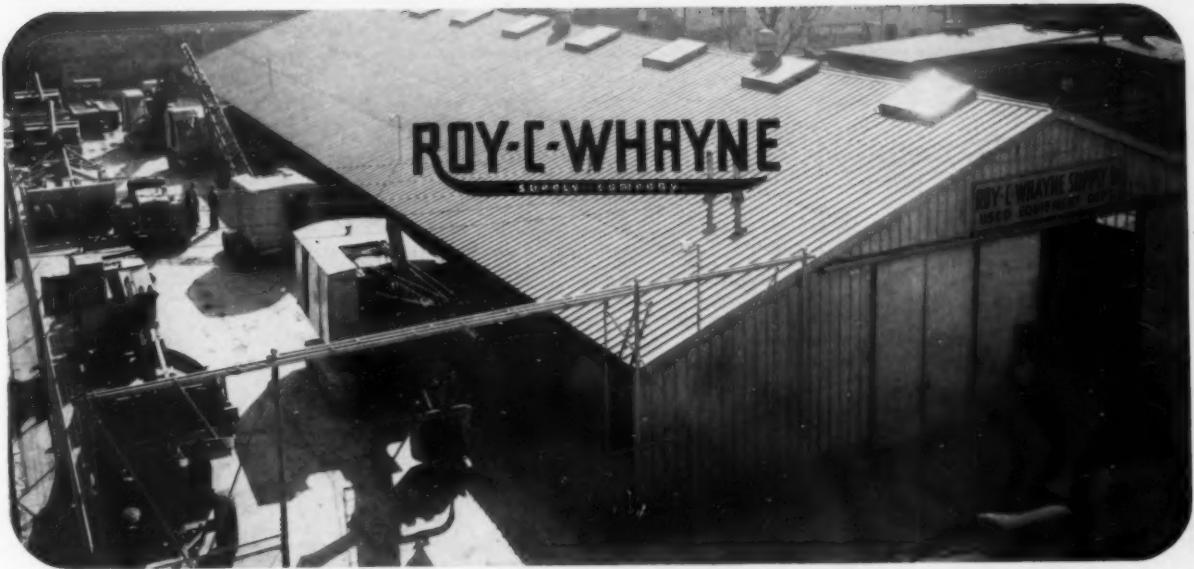
W. H. K. BENNETT COMPANY
 57 E. Jackson Blvd. Chicago, Illinois

FOR SALE
 2—Marion Model 490 Heavy Duty Quarry Shovels,
 2½ c.y. Ward-Lombard Controls, 2300 V. A.C.
 input voltage, 250 V. D.C. operating voltage.
 Completely reconditioned, electrical and mechanically.
 Ready for service. Immediate shipment.
 Many extra parts, including 3½ c.y. Esco Dippers, Clamshell Equipment, Fairleads, and
 65 foot booms.

Address Box A-97, Rock Products
 309 W. Jackson Blvd., Chicago, Illinois

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ROCK PRODUCTS



This is one of our display yards and building adjacent to our main plant, floor space 22,100 sq. ft.—total plant covers 126,500 sq. ft.

1—CRUSHING PLANT. Diamond, 15x36 Roller Bearing Jaw Crusher with 36" x 29" roll crusher with conveyor and bucket elevator; all on one frame. One Symons two-deck 3' x 20" shaker screen with return conveyor, two 21 yd. bins and one model L90 Allis-Chalmers Gasoline Engine.

PRICE ON APPLICATION

1—CRUSHER, Model 10" x 30" Good Roads, roller bearing, overhead eccentric type. \$2850.00

1—CRUSHER, Good Roads Model 10" x 30", overhead eccentric, roller bearing. \$1500.00

1—CRUSHER, Rogers Jaw Type size 16" x 24", late model, overhead eccentric. \$1600.00

1—COMPRESSOR, Sullivan, Class WL60, 10x5% x 5, UNITAIR, stationary type, complete with air receiver, skid mounted; capacity 315 cu. ft. actual air. \$1100.00

Compressor, 600 C.F.M., stationary type. 11x10x5% x 5, Class WL-32-RH, 2-stage. \$2650.00

1—COMPRESSOR, Portable, Ingersoll-Rand, 119 cu. ft. capacity, powered by 4 cylinder Waukesha Gasoline Engine, all 4 steel wheels. \$1600.00

1—COMPRESSOR, Portable, Ingersoll-Rand, 160 cu. ft. displacement, powered by Waukesha Gasoline Engine on 4 steel wheels. \$350.00

1—COMPRESSOR, Portable, Ingersoll-Rand, 110 cu. ft. displacement, powered by Waukesha Gasoline Engine, all on 4 steel wheels. \$750.00

1—COMPRESSOR, Portable Schramm, 110 cu. ft. powered by 4 cylinder gasoline engine, mounted on 4 steel wheels, rebuilt. \$750.00

1—PULVERIZER, Model EH20 Day, 6" x 14" feed opening; roller bearing, rated capacity 5 to 8 tons per hour, rated HP required 40; in operating condition. \$300.00

1—PULVERIZER, Model 2XA Gruendler, practically new. \$950.00

1—GENERATOR SET, Rebuilt, 100 KVA Westinghouse Generator, 3 phase, 60 cycle, 240 volt with exciter and rheostat, direct connected to new Model K1664, 6 cylinder Cummins Diesel Power Unit; all mounted on steel channel base. \$8344.00

1—GENERATOR SET, Rebuilt, 70 KVA General Electric Generator, 3 phase, 60 cycle, 230 volt with exciter and rheostat, direct connected to new Model 6DH-691 Buda, 6 cylinder Diesel Power Unit, with electric starter and battery; all mounted on steel channel base. \$4342.00

1—GENERATOR SET, Rebuilt, 56.3 KVA General Electric Generator, 3 phase, 60 cycle, 220 volt with exciter and rheostat, direct connected to new Model L12B Buda, 6 cylinder Gasoline Power Unit; all on steel channel base. \$1891.00

1—GENERATOR SET, Rebuilt, 40 KVA Allis-Chalmers Generator, 3 phase, 60 cycle, 240 volt, with exciter and rheostat, direct connected to new Model 4690G "Caterpillar," 6 cylinder Gasoline Power Unit; all mounted on steel channel base. \$2689.00

The above engine can be equipped to operate either on natural gas or gasoline.

1—GENERATOR SET, Rebuilt, 22.5 KVA Northwestern Generator, 1 phase, 60 cycle, 110 volts, with exciter and rheostat, direct connected to new Model JXA Hercules, 6 cylinder Gasoline Power Unit, with electric starter and battery; all mounted on steel channel base. \$1585.00

2—GENERATOR SETS, Rebuilt, 12.5 KW Allis-Chalmers direct current Generator, 125 volt, with rheostat, direct connected to new Ford Ferguson, 4 cylinder Gasoline Power Unit with electric starter and battery; all mounted on steel channel base. EACH \$24.00

1—GENERATOR SET, Rebuilt, 7.5 KW direct current, Allis-Chalmers, 125 volt, with rheostat, direct connected to new Ford Ferguson, 4 cylinder Gasoline Power Unit, complete with electric starter and battery; all mounted on steel channel base. \$349.00

1—GENERATOR SET, Rebuilt, 6 KW Fairbanks-Morse, direct current Generator, 115 volt, with rheostat, direct connected to new Model F162, 4 cylinder Continental Gasoline Power Unit; all mounted on steel channel base. \$783.00

1—GENERATOR SET, Rebuilt KW5, Willey, direct current Generator, 125 volt with rheostat, direct connected to Model F162, 4 cylinder Continental Gasoline Power Unit; all mounted on steel channel base. \$627.00

ALSO, LEASES ARE EXPIRING DAILY ON OUR LARGE STOCK OF RENTAL EQUIPMENT, CONSISTING OF TRACTORS, SCRAPERS, BULLDOZERS, SHOVELS, CRANES, COMPRESSORS, WAGON DRILLS, CONCRETE MIXERS, PUMPS, SHEEPFOOT ROLLERS, ELECTRIC GENERATORS, ONE COMPLETE CONCRETE PAVING OUTFIT WITH 34" DUAL DRUM PAVER—MANY ITEMS AVAILABLE IMMEDIATELY.

1—WAGON DRILL, Ingersoll-Rand, latest model, on pneumatic tires, like new. \$1165.00

1—TRACTOR, Crawler Type, "Caterpillar" Model 35, 10 cu. yd. capacity. \$1320.00

1—TRACTOR, Crawler Type, Model Two-Ten "Caterpillar" gasoline powered, rebuilt. \$6000.00

1—PORTABLE BELT CONVEYOR, Model HT14, Chicago Automatic with 14" belt with cleats, 20 feet long, powered by gasoline engine, rebuilt. AL. \$495.00

1—LOCOMOTIVE, Plymouth, 8-ton, 36" gauge, Model BTU, powered by gasoline engine, operating condition. \$900.00

1—TRAIL PUMP, C. H. & E. Model No. 11 Triplex Road Pump, powered by 4 cylinder Waukesha Model V121H Gasoline Engine; mounted on 4 steel wheels. \$750.00

1—CONCRETE MIXER, Model No. 10 DDKX Jagger, equipped with water regulator, power loader, powered by 4 cylinder Gasoline Engine, mounted on 2 pneumatic tires. \$350.00

1—SHOVEL, Model 32B Bucyrus-Erie, 1 cu. yd. capacity, powered by gasoline engine; a rear end machine, 45° boom for this machine. \$11,750.00 Have 45° boom for this machine. \$750.00

1—CRANE OR CLAMSHELL, Model 206 P&H, 1/2 cu. yd. capacity, powered by 4 cylinder Gasoline Engine. \$2500.00

2—SHOVELS, Osgood, Crawler Type, 1/4 cu. yd. capacity, powered by gasoline engine. EACH \$7950.00

1—SHOVEL, CRANE COMBINATION, Osgood, Crawler Type, 1 cu. yd. capacity, powered by gasoline engine with 60 ft. crane boom. \$3500.00

1—TRENCHHOE ATTACHMENT, for Thew-Lorain Model 55, 1/2 or 1 yd. machine. \$1600.00

1—SHOVEL FRONT, for 1 yd. Osgood Shovel. \$750.00

1—SHOVEL FRONT, Bucyrus-Erie for Model 10B, 1/2 cu. yd. capacity. \$325.00

1—CURB AND GUTTER FORMS, Heltzel, 600 ft. includes back rail, front rail, gutter rail, division plates and stakes, nearly new. 25% off list

1—SHOVEL, Koehring Model No. 2, equipped with 1/2 cu. yd. Rock Type Bucket, electric start, powered by Waukesha Gasoline Engine. \$8250.00

1—ROLLER, Huber 10-ton, 10" wheel, 4 cylinder Gasoline, A-1. \$2650.00

1—BLACKTOP PAVER, Admum, powered by 4 cylinder Gasoline Engine, 3 solid rubber tires front, 2 rolls rear. \$3795.00

1—CONCRETE PAVER, Koehring Model 27E, complete, powered by gasoline engine. \$1995.00

2—WHEELBARROW SCALES, Winslow, Jr., 30" x 33" platform, one tare beam, two material beams. EACH \$100.00

0—SAW RIGS, New Models, 10' x 10', powered by gasoline engine, complete with 14" cross cut and 14" rip saw blades; offered at \$30.00 reduction.

EACH \$305.00

1—DUMP TRUCK, Ford V-8, equipped with brand new 3 yd. Garwood Hydraulic Dump Body, has good tires. \$1050.00

3—BACKFILL TAMPERS, Jackson electric, complete with 60 lb. weight. EACH \$150.00

0—ELECTRIC PAVING VIBRATOR, Jackson, with 4" head and 60 ft. of cable. \$165.00

1—ELECTRIC VIBRATING GENERATOR, Jackson, 1/2 KVA, 120 volt, 3 phase, 60 cycle, powered by air cooled gasoline engine; will handle the above vibrator or backfill tamper. \$195.00

1—TAUTLINE CABLEWAY, Sauerman, 5-ton capacity with cables and pulleys for 540 ft. incline span. \$1250.00

2—POWER UNITS, International Model 1550, 4-cylinder, 4 1/2 x 6, mounted on steel base. \$375.00

1—POWER UNIT, Hercules Model TXO, 90 HP, 4-cylinder gasoline, complete with clutch, 900 RPM, heavy duty. \$1325.00

1—GRADER, Pull-type, Adams No. 121, bank stopping, 12" blade. \$500.00

1—GRADER, Pull-type, "Caterpillar" Model 10, 10' wide, bank stopping. \$500.00

10—GENERATOR SETS, New Master Model MG6, 6.3 KVA, powered by 4 cylinder Gasoline Engine. EACH \$695.00

1—CENTRIFUGAL PUMP, Rex 4" suction, 4" discharge, powered by 4 cylinder gasoline engine; mounted on two steel wheels. \$450.00

1—COLD PATCH MIXER KWIK-MIX, Model 10BIT, 10 cu. ft. capacity, with loader and tilting drum, 4 cylinder Gasoline Engine, all on four pneumatic tires. \$300.00

We have a large stock of new and rebuilt Gasoline and Diesel Engines, all sizes, all makes.

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 2—Jeffrey Hammer Mills, 24" x 36", 18" x 24"
 1—Denver 36" x 16" Crushing Rolls
 3—Tyler Hammer Screens, 3' x 5', 4' x 5'
 2—Raymond Mills, 2 and 4 roll
 1—Raymond No. 1 Impact Mill
 6—Rotary Dryers 3' x 18', 4' x 30', 4' x 40', 5' x 35', 6' x 65'
 16—Jaw Crushers, 2" x 5" to 84" x 56"
 14—Hammer Mills, Williams, Jeffrey, Gruender, Jay Bee, from 5 to 100 HP
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1— $\frac{1}{2}$ rd. Northwest shovel serial No. 997 old style cat rebuilt Climax engine used 100 hrs. \$1200.
 1— $\frac{1}{2}$ rd. Northwest shovel serial No. 783 old style cat Climax engine. \$1200.
 1—Waukesha engine EU 202F, No. 69580, good condition, rebuilt. \$300.
 100' ft. used 1" rubber covered belting in 3 pieces $\frac{3}{4}$ " top, 1 $\frac{1}{2}$ " bottom; price per foot. \$1.90.
 100' 24" used top concave ball bearing idlers; each \$10.
 50' 24" bottom used ball bearing idlers; each \$7.00.
 1—Wooden sand scoop approx. 112' x 33' x 10'. \$2000.
 1—Wooden sand scoop approx. 110' x 31' x 9.0'. \$4500.
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Bucyrus-Erie Steam Dragline, Class 14, Boom 87', $\frac{1}{2}$ rd. bucket. A-1 condition. Bargain price.
 The Industrial Equipment Corp.
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FOR SALE

MARION Mod. 36, combination steam shovel crane and dragline— $\frac{1}{2}$ rd. cap. UNIVERSAL— $\frac{1}{2}$ " swing crane, cat mounted, 24-ft. boom, $\frac{1}{2}$ rd. capacity.
 CLAMSHELL BUCKETS— $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{2}$ and 2 rds. rehandling type.

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1 10 ton hand operated overhead crane with 45' span.
 1 55 ft. boom like new.
 1 Buffalo Springfield 10 ton 3 wheel roller.
 2 2 $\frac{1}{2}$ rd. yd. Jaeger Mixers mounted on International trucks.
 1 3 $\frac{1}{2}$ rd. Blaw Knox Mixer, no truck.
 1 1942 Jaeger 4 yd. truck mixer, no truck.
 Several double and triple drum Steam Hoists in good condition.
 1 Model 42-15 Austin Trencher.
 2 Rex 78 Mixers with Pneumatic tires.
 1 Rex 58 Mixer, completely rebuilt.
 Russ Equipment Company, 101 Great Arrow Ave., Buffalo, New York

Used Equipment For Sale

FOR SALE

Two Yard Elec' Sauerman Dragline with 150 HP motor and controls.
 Byers Gas Cat' Crane with $\frac{1}{2}$ yard clam.
 No. 9 Allis-Chalmers Style K Gr' Crusher.
 10" x 24" Reduction Jaw Crusher.
 Diesel Engine 225 HP, never used. Cheap.

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WANTED

8 ton Tandem Rollers
 $\frac{1}{2}$ yard Shovel—Gas
 1 yard Shovel—Gas or Diesel
 1 or $1\frac{1}{4}$ yard Pullshovel
 1 or $1\frac{1}{4}$ yard Crane-Shovel
 Motor Grader, 12 foot blade
 Bucket Loader
 30 ton Trailer
 25 ton Loco-Crane, 50 foot boom
 20 to 30 ton Gas Locomotive
 24 inch Pan Conveyor, 60 to 70 foot
 20 to 30 ton Loco-Crane, 50' foot
 boom

Barber-Greene Snow Loader
 Barber-Greene Trenching Machine
 1,000 gal. Fire Pump, 100 lb.
 4 wheel drive 5 to 7 $\frac{1}{2}$ Dump Truck
 Gas driven 300 Ampere Welder

J. T. WALSH

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 AIR DUMP CARS
 Any quantity, type, make or location.
 Also 10 to 30-ton Gas or Diesel Locomotives
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CEMENT-PLASTER-STUCCO CONCRETE PRODUCTS
 "FINE BECAUSE OF THEIR FINENESS"
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BLUE RIDGE TALC CO., INC.
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WANTED—EXPERIENCED ELECTRIC SHOVEL OPERATORS FOR MARION 1 $\frac{1}{2}$ AND 2 YARD SHOVELS. FOR WORK NEAR NASHVILLE. CALL US COLLECT OR WIRE COLLECT.

FRANKLIN LIMESTONE COMPANY
 612 Tenth Ave. North, Nashville, Tennessee
 PHONE 6-2612

Associates Wanted for Business in Alaska Cement plant, Brick and Pipe plants contemplated. No competition, excellent raw materials and location, growing market, used equipment available. Discussion of opportunities with individual or firm having some funds to invest is invited.

Address Box A-95, Rock Products
 309 W. Jackson Blvd., Chicago, Ill.

Positions Wanted

POSITION WANTED BY SUPERINTENDENT of Rock and Gravel Productions, with 10 years experience supervising erections and operations both in U.S.A. and Foreign contracts. Speaks Spanish fluently. Graduate civil and mechanical engineer. Available after Jan. 15th. Address Box A-91, care Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

POSITION WANTED—HAVE HAD 15 years' experience as supt. and foreman of Rock Crushing and Sand and Gravel Plant. Can set up any make of plant and handle any quarry or gravel pit. Have just returned from another overseas job and have clear release. Can go anywhere, furnish any reference. Address Box A-94, care Rock Products, 309 W. Jackson Blvd., Chicago, Ill.

POSITION WANTED BY GRADUATE Chemical Engineer with 12 years experience in the Cement Industry. Experience has covered Chemical Process Control, Research, Geological Exploration for Raw Materials, Operation and Production of Special Cements, Concrete Service Work. Address Box 996, Care of Rock Products, 309 West Jackson Blvd., Chicago, Ill.

POSITION WANTED BY GRADUATE chemist with 10 years' experience in Cement Industry. Experience includes supervision of process control, including production of special cements, supervision of chemical and physical testing laboratory and plant research. Age 38. Married. Now employed. Address Box A-96, Rock Products, 309 W. Jackson, Chicago, Ill.

WANTED—POSITION AS SUPERINTENDENT or Quarry Foreman. 20 years' experience in crushing, blasting, loading, etc. 30 years old, married, good health, draft deferred. Address Box A-98, c/o Rock Products, 309 West Jackson Blvd., Chicago, Illinois.

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In battle, dogged endurance is essential to victory. In excavating, too, a bucket must not only dig, but continue to dig efficiently under every conceivable condition, for long periods of time. Experience has built into Owen Buckets materials, original features and design factors that assure enduring performance that is unequalled.

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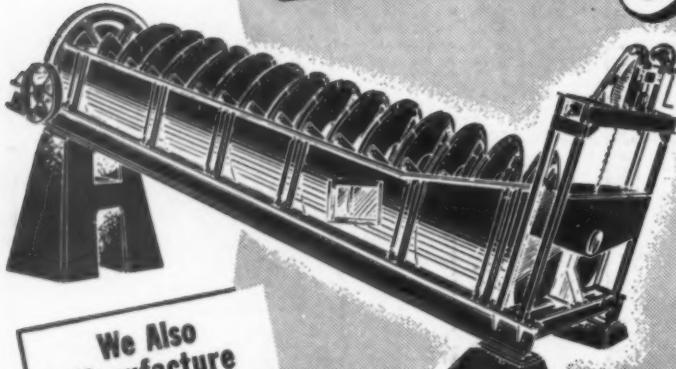
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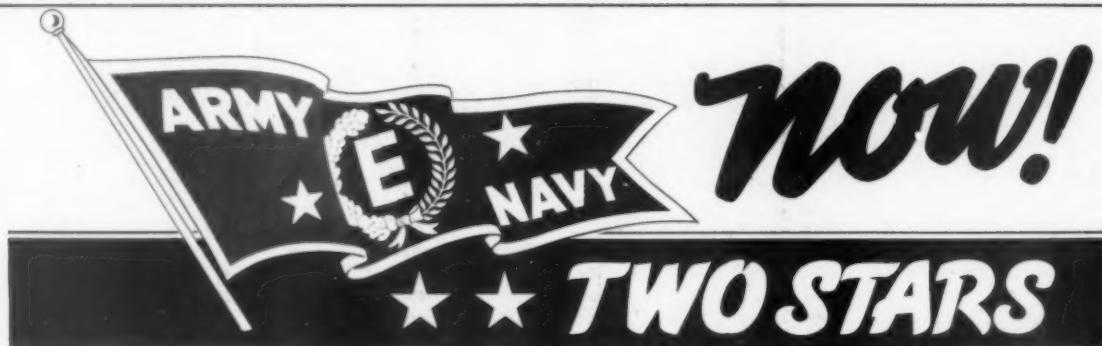
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our regular line of Materials Handling and Power Transmission machinery. This equipment is engineered and manufactured to those same rigid standards that have played a part in winning the Army-Navy pennant and stars.

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Continental GIN COMPANY
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ARE TO HANDS AND FINGERS**



**AMERICAN CABLE *TRU-LAY* *Preformed*
REDUCES SUCH ACCIDENTS**

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We hope you have never had a lost-time accident due to wire rope. Some operators have, however, and 1943 is no time to have workmen laid up with blood-poisoned hands. Many operators have drastically reduced accidents (and compensation claims) by adopting American Cable *TRU-LAY Preformed*—the safer rope.

Being *preformed*, American Cable *TRU-LAY* is tract-

able—flexible—easy to handle. It resists kinking and snarling. Worn or broken crown wires lie flat and in place—refusing to wicker out to puncture hands or tear clothing...Furthermore, being *preformed*, *TRU-LAY* will last longer than ordinary cable. It has far greater resistance to bending fatigue. That means reduced machine shutdowns for replacement—steadier production—greater dollar value. . . . All American Cable ropes identified by the Emerald strand are made of Improved Plow Steel.



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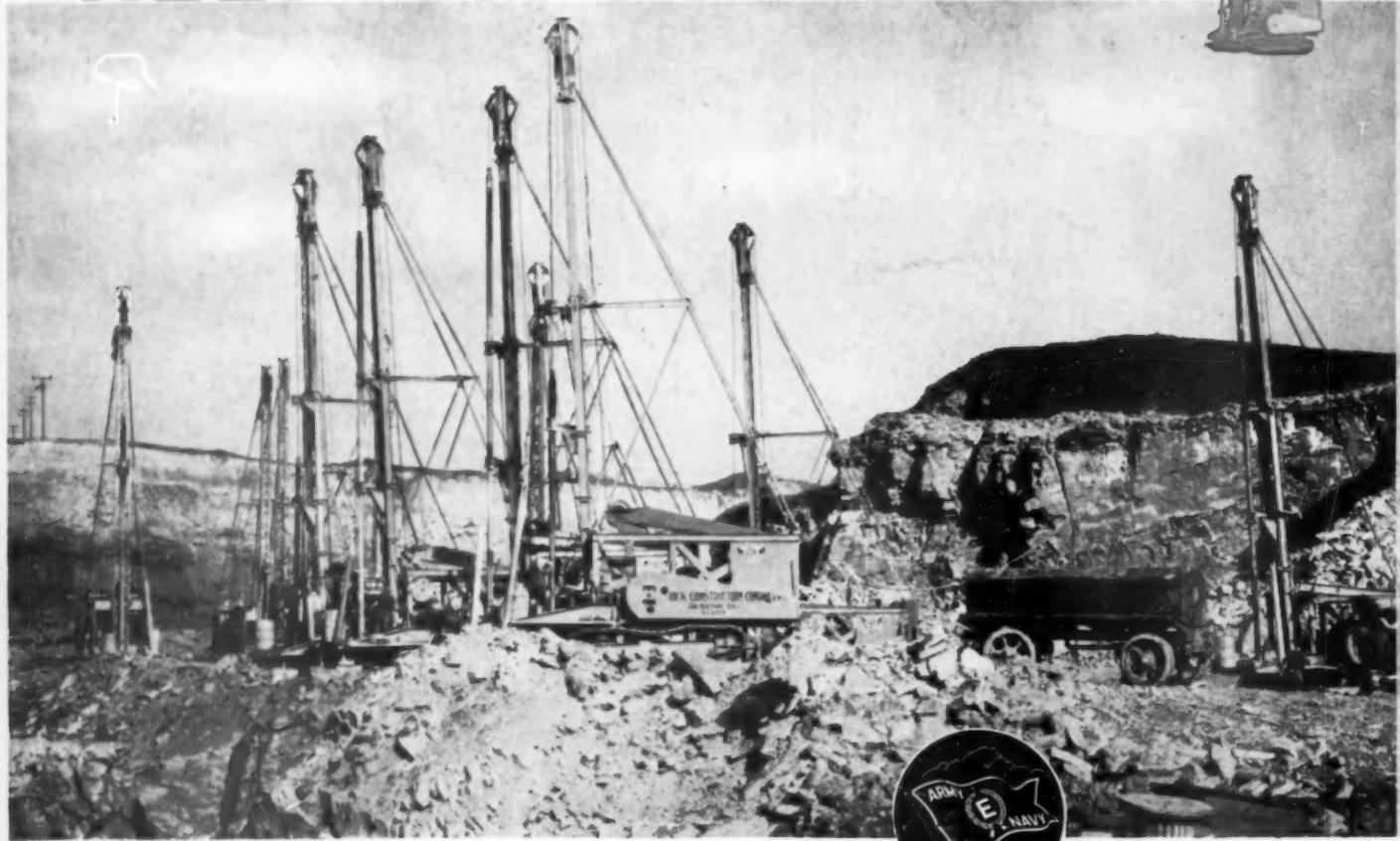
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Keep your drill performing better, make your equipment last longer:

MAR - 1 1944

H 38

1. Watch your wire line; be careful to avoid kinks; keep it lubricated.

2. Watch all bearings; see that they are tight; remove shims if necessary.

3. Watch your drilling motion; keep it steady; maintain proper tension on your line.

4. Watch your brakes and clutches; keep them carefully adjusted to improve operation and increase life of wearing parts.

5. Watch your tools; don't feed them out too fast; it's better to drill with a tight line and let the tools reach out on the stretch and spring of the line and the shock absorber.

DRILL FOR
VICTORY

BUCYRUS-ERIE
SOUTH MILWAUKEE, WISCONSIN

